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AccessPack
Access Control System

Model APP10x, Version 2

Installation and User Manual

V2.3: 16/02/2015

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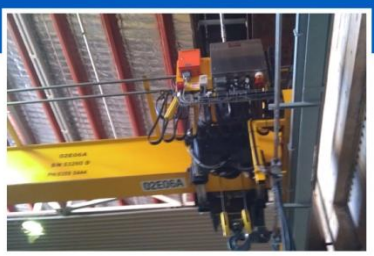

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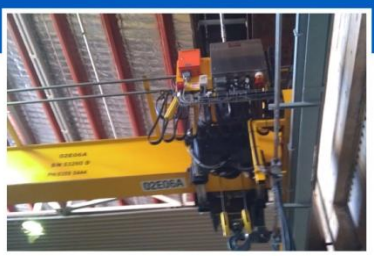

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1 OVERVIEW

AccessPack is an access control system that can be fitted to any electrically powered device, including stand-alone, mobile or remote plant. AccessPack uses smart card technology to ensure that equipment can only be used by authorised personnel. Users are automatically logged off when the equipment is stationary, idle or stopped. To ensure accountability, AccessPack records who accessed the equipment and when they did so.

An AccessPack device consists of two parts: (a) a generic blue puck that contains the RFID reader and smart electronics, usually mounted on the outside of the equipment to be protected, and (b) a power supply board, specific to the type of equipment being protected, that is typically mounted inside the equipment.

Currently AccessPack kits are available for the following applications:

- Crane joystick radios and pendants
- Doors
- Vehicles
- Fixed equipment (e.g. Break-out machines, lathes, ovens etc)
- Computer terminals
- Variable frequency drives

The type of AccessPack kit must be specified at time of ordering.

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2 SPECIFICATIONS

2.1 Electrical Specifications

2.1.1 AccessPack Puck

Parameter	Description	Min	Typ	Max	Units
V_{in}	Supply voltage	4		12	VDC
I_{in}	Supply current	6	7	90*	mA
Start up Button Output	Current		10		mA
	Operating temperature	-40		85#	°C

*only when communicating via Bluetooth

Extended operation at maximum temperature will reduce device life.

2.1.2 Interface Boards

Note that models for crane radios, APP100 and APP101 do not have an interface board.

2.1.2.1 Crane Pendant Board (APP102)

2.1.2.1.1 Pendant Board with 10 terminals

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	18		55	VAC
Relay Output 1	Current			500	mA
Relay Output 1	Voltage			60	VAC
Relay Output 1	Power			10	W
Relay Output 2	Current			500	mA
Relay Output 2	Voltage			60	VAC
Relay Output 2	Power			10	W

2.1.2.1.2 Pendant Board with 4 terminals

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	18		250	VAC
Relay Output 1	Current			4	A
Relay Output 1	Voltage			250	VAC
Relay Output 1	Power			>100	W
Relay Output 2	Current			4	A
Relay Output 2	Voltage			250	VAC
Relay Output 2	Power			>100	W

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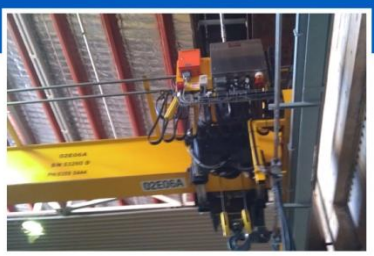

2.1.2.1.3 Pendant Board with 3 terminals

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	18		250	VAC
Relay Output 1	Current			4	A
Relay Output 1	Voltage			250	VAC
Relay Output 1	Power			>100	W

2.1.2.2 Vehicle Board (APP103)

2.1.2.2.1 Initial Design (no part number on device)

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	12		24	VDC
Relay Output (NO)	Current			10	A
Relay Output (NO)	Voltage			36	VDC

2.1.2.2.2 2nd Design (marked as APP103, plastic case)

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	12		48	VDC
Relay Output (NO)	Current			10	A
Relay Output (NO)	Voltage			48	VDC

2.1.2.2.3 3rd Generation (also marked as APP103, metal case)

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	6		48	VDC
Relay Output (NO)	Current			20[1]	A
Relay Output (NO)	Voltage			48	VDC

[1] When relay common bridging link is used

2.1.2.3 Door Board (APP105)

This board is used in AccessPack LockBoxes (APP105LB, APP105BB).

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	8	12	24	VDC
Relay Output	Current			8	A
Relay Output	Voltage			36	VDC

2.1.2.4 Fixed Equipment Board (APP106, APP107, APP116)

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage	32		240	VAC
Relay Output	Current			8	A
Relay Output (NO)	Voltage	24		480	VAC

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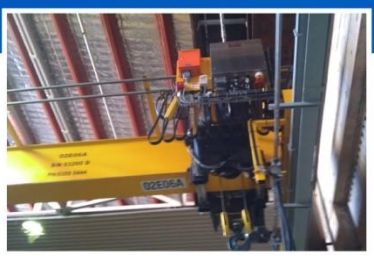

2.1.2.5 PC Dongle (APP108)

Parameter	Description	Min	Typ	Max	Units
Vin	Supply voltage (USB)	4	5	6	VDC

2.2 Communication Specifications

Communications between the device and a host is usually via a Bluetooth radio link. The Bluetooth device PIN is 0000.

For more details on the communication protocol used to communicate with the AccessPack, see Appendix A.

2.3 Physical Specifications

2.3.1 AccessPack Puck

The new AccessPack Puck enclosure is made of glass filled nylon (Tested in accordance to UL94). Prior to May 2012, the enclosure was made from cast epoxy resin.

Dimensions of the AccessPack Puck are provided in the following table and diagram.

Overall length (mm):	55
Overall width (mm):	50
Overall height (mm):	41
Weight (kg):	160g
Mounting:	Standard 22 mm hole

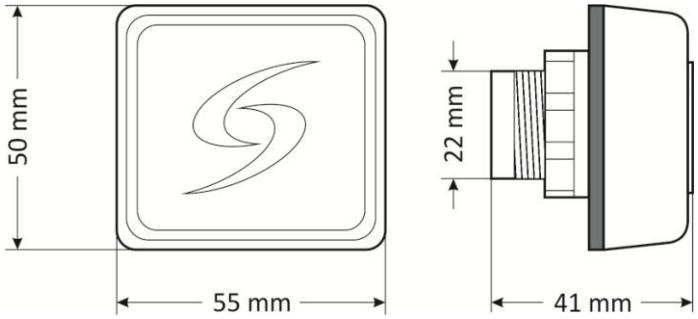

Figure 1: Dimensions of AccessPack puck

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2.3.2 Interface Boards

The overall dimensions of the interface boards and/or their cases are:

	Model	Length (mm)	Width (mm)	Height (mm)
Crane radio	APP100, APP101	No board – wiring harness only		
Crane pendant board (3/4 terminals)	APP102	54	40	25
Vehicle board (generation 1 in case)	APP103	66	49	36
Vehicle board (generation 2 in case)	APP103	107	68	32
Vehicle board (generation 3 in case)	APP103	110	120	37
Door board	APP104	51	19	11
Fixed equipment board (no case)	APP106	89	60	43
Fixed equipment board, Case Type 1 with E-Stop	APP107	120	85	103
PC board	APP108	65	25	14
Fixed equipment board, Case Type 2 with cable harness	APP116	105	74	40
Variable Frequency Drive board	APP109	No board – wiring harness only		
LockBox (entire unit)	APP105LB	200	300	200
BlanketBox (entire unit)	APP105BB	500	400	210

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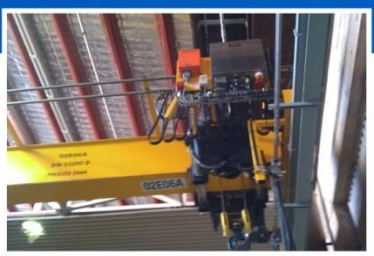

3 INSTALLATION DETAILS

3.1 Prior to Installation

Before installing your AccessPack device visually inspect the device and check that:

(a) the type of AccessPack mounting kit is appropriate for your application;
(b) the case is not damaged and fits together securely;
(c) wiring harness is not damaged.

3.2 Wiring Connections & Diagrams

The AccessPack puck comes with a multi-core output cable. The generic connections associated with each coloured core are shown in Figure 2.

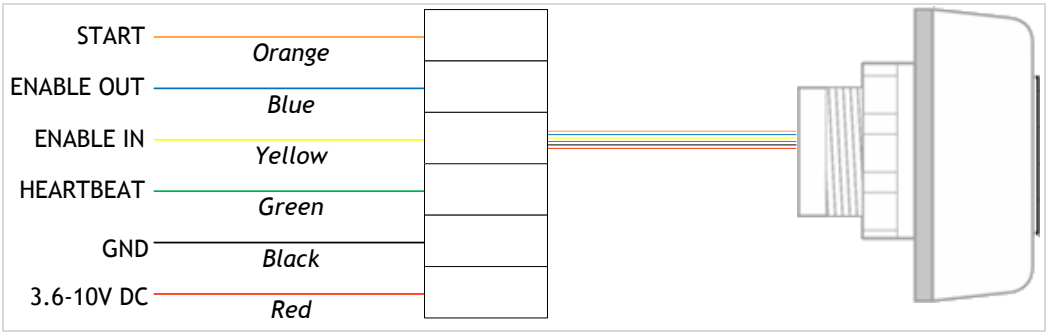

Figure 2: AccessPack Puck Outputs

Start: The Start Output provides 1-5 pulses at logon. The Start connection is an open collector and rated to 24V 10mA.

Enable OUT: Enables and disables the operation of the equipment. It changes state when a valid card is presented.

Enable IN: Monitors the status of the E-Stop/Enable/Seat-Switch etc. Any voltage between 2VDC and 100VDC inclusive will activate this input and cause the AccessPack to log off instantly.

Heartbeat: If the equipment the AccessPack is to be installed on has a light or LED that indicates the equipment is functioning (for example, a flashing green LED), the AccessPack heartbeat connection is connected to the terminal that changes level.

A range of Application notes have been developed that provide detailed information on how to wire these connections on a variety of specific equipment types/models. These are available for download from www.accesspack.com.au. Generic guidelines for each model type are provided in the following sections.

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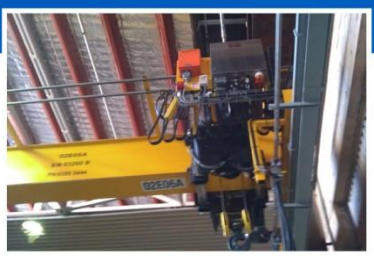

3.2.1 AccessPack with Wiring Harness (APP100)

This model of AccessPack is used for HBC Micron or ECO radios. AccessPacks need to be factory installed on these devices due to their size and circuit board complexity.

Consequently, no wiring diagram is provided.

3.2.2 AccessPack with Wiring Harness and E-Stop Button (APP101)

This type of AccessPack is typically installed on HBC joystick radios.

3.2.2.1 Wiring Harness Connections

Wire colour	*Description*
Black	Battery –ve
Red	Battery +ve (>3.6V)
Green	Heartbeat / Flashing LED
Orange	Start button
Yellow	E-Stop, prewired
Blue	Not connected

These can be connected as per the wiring diagram shown in Figure 3.

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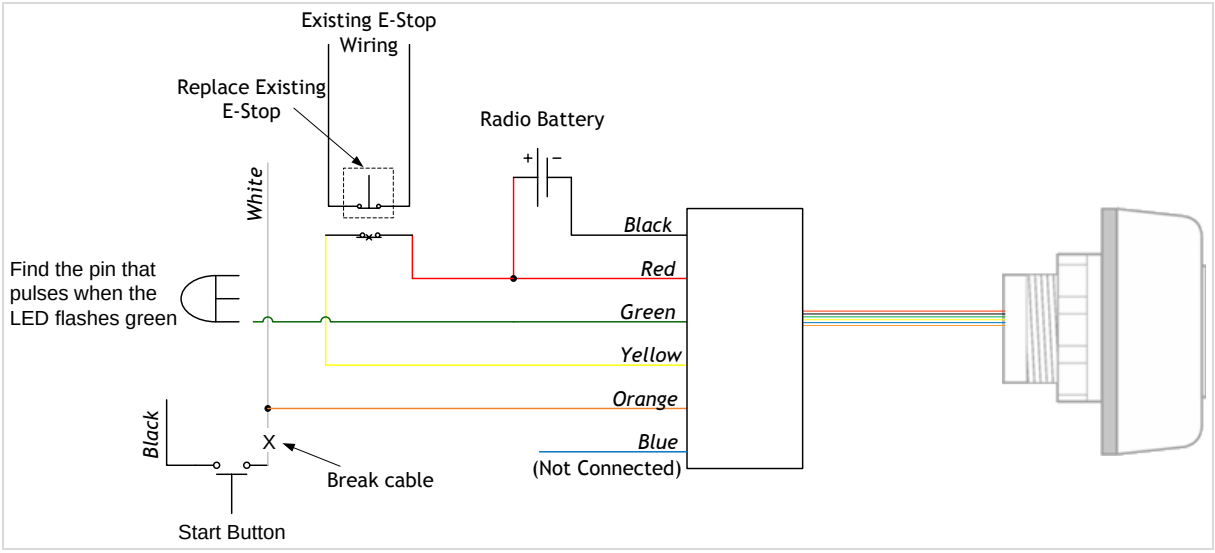
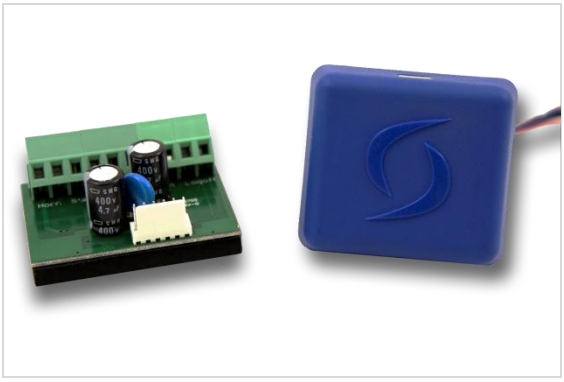


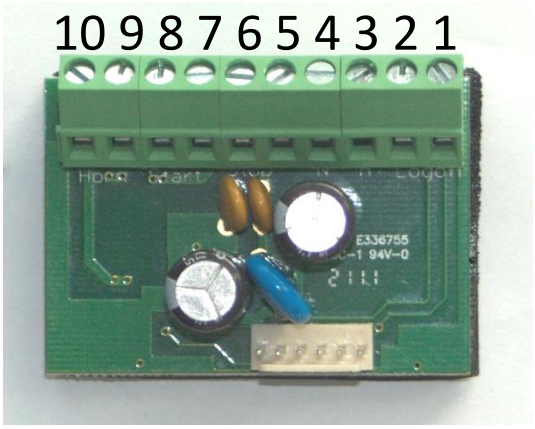
Figure 3: Wiring diagram for APP101

3.2.3 AccessPack with Crane Pendant Board (APP102), 10 terminals



3.2.3.1 Pendant Board Connections - 10 inputs

This diagram shows the location of terminal 1.



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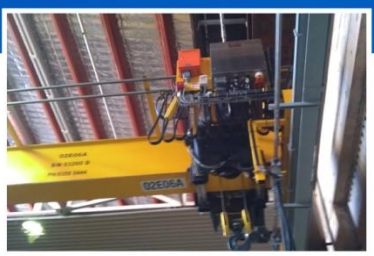

Terminal Number	*Name*	*Description*
1	E-Stop Monitor Switch Terminal	Connects to second NC contact on E-Stop Button
2	E-Stop Monitor Switch Terminal	
3	48VAC Input	Power
4	48VAC Input	
5	E-Stop Output	Connects in series with E-Stop switch to deactivate crane
6	E-Stop Output	
7	Start Output Terminal	Replaces start switch so AccessPack can pulse a start signal to activate crane
8	Start Output Terminal	
9	Horn Output Terminal	Connect in parallel to the start button to sound horn when crane starts
10	Horn Output Terminal	

3.2.3.2 Pendant Wiring Diagram - 10 inputs

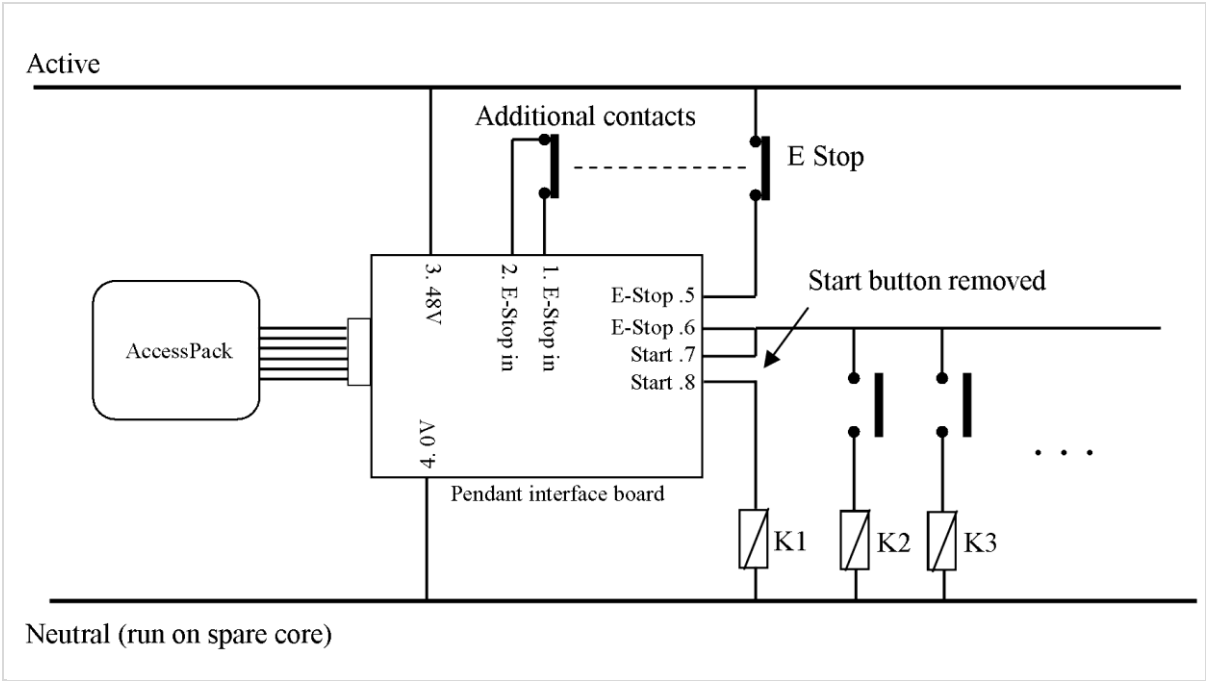

Figure 4: Connecting an APP102 (Horn outputs not shown)

It WILL be necessary to run a new 48VAC neutral conductor from the switch panel to the pendant to provide the AccessPack Interface board with 48VAC.

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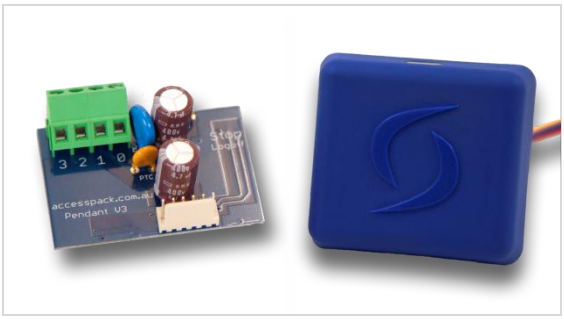
3.2.4 AccessPack with Crane Pendant Board (APP102), 3 or 4 terminals



3.2.4.1 3 -4 terminal Pendant Board Connections

Terminal numbers are marked on the circuit board from 0 to 3.

Terminal Number	***Description***
0	Connects to 0 Volts
1	Power (Crane control voltage)
2	Main contactor hold circuit / control voltage common
3*	Main contactor start circuit (not used in normal installs)

Note: Terminal 3 is not included on the 3-input pendant board.

3.2.4.2 3 -4 Terminal Pendant Wiring Diagram

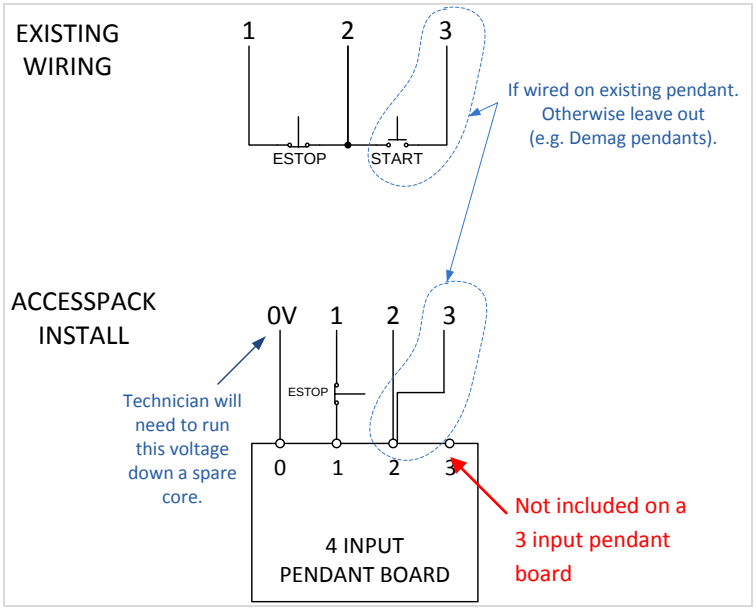


Figure 5: Connecting a new 3 or 4 input pendant board (APP102)

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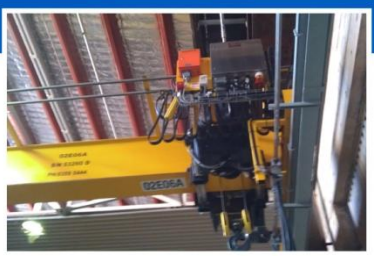
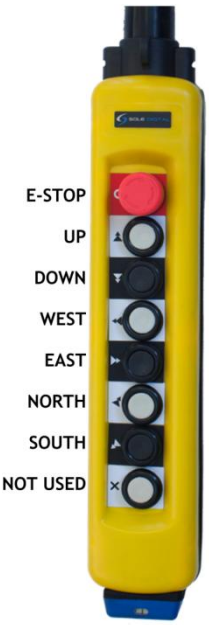


3.2.5 AccessPack Pre-installed on an 8 button Crane Pendant

To simplify onsite installation, an AccessPack can be factory fitted to a new 8 push button pendant. This is installed as per Figure .

Onsite work then involves wiring up the pendant to the crane.



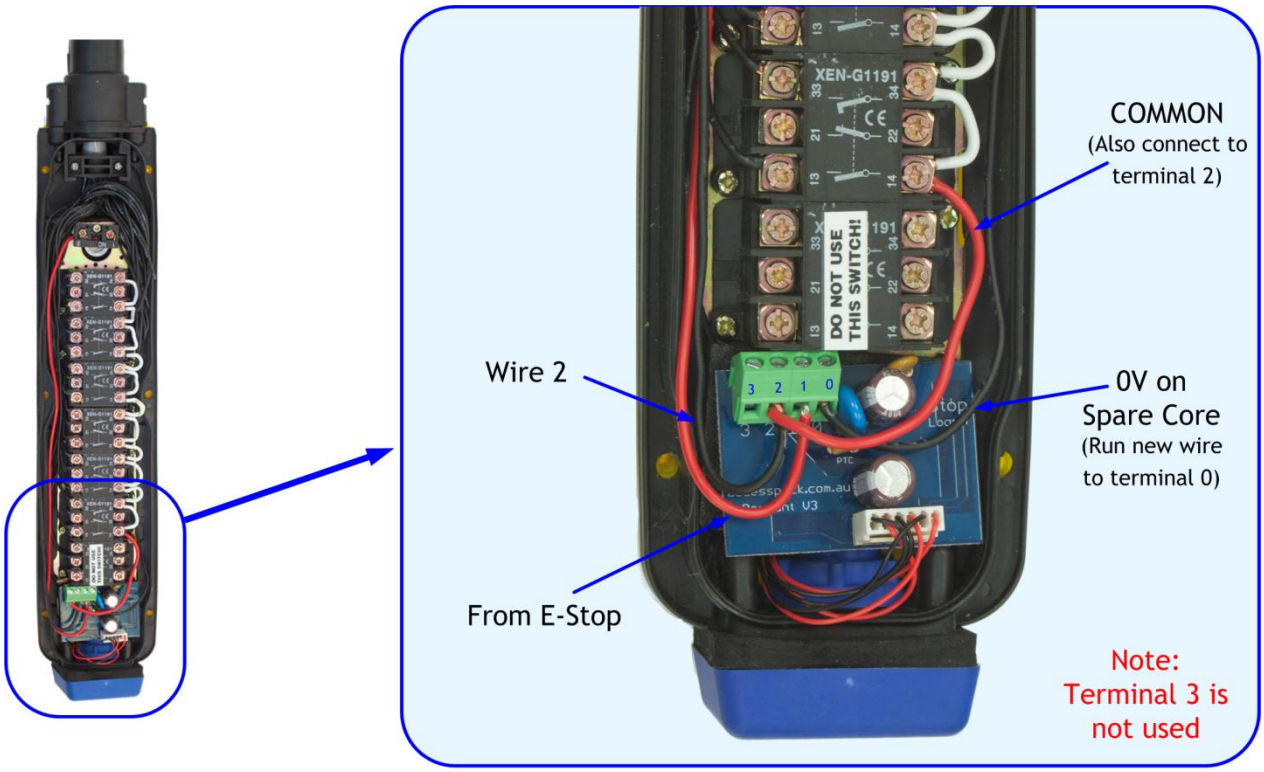


Figure 6: AccessPack pendant board installed on a new 8 button crane pendant

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3.2.6 AccessPack with Vehicle Board (APP103) - 1st/2nd/3rd generation designs

In 2013, the Vehicle board was revised and enclosed in a new case. This section contains information about using both board designs.

The primary difference between the two designs is that the first generation vehicle kit only enabled the engine, whilst the second generation is actually capable of cranking the engine.

3.2.6.1 Original APP103 Board Connections

This diagram shows the location of terminal 1, which is indicated by a coloured sleeve (usually white or blue) on the black cable.

Cable Number	*Label*	*Description*
1 (coloured sleeve)	**-**	Ground connection
2	**+**	Power connection 8 to 14V
3	Enable	
4	N/C	Relay Output Terminal Normally Closed
5	Com	Relay Output Terminal Common
6	N/O	Relay Output Terminal Normally Open

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3.2.6.2 Original APP 103 Wiring Connections

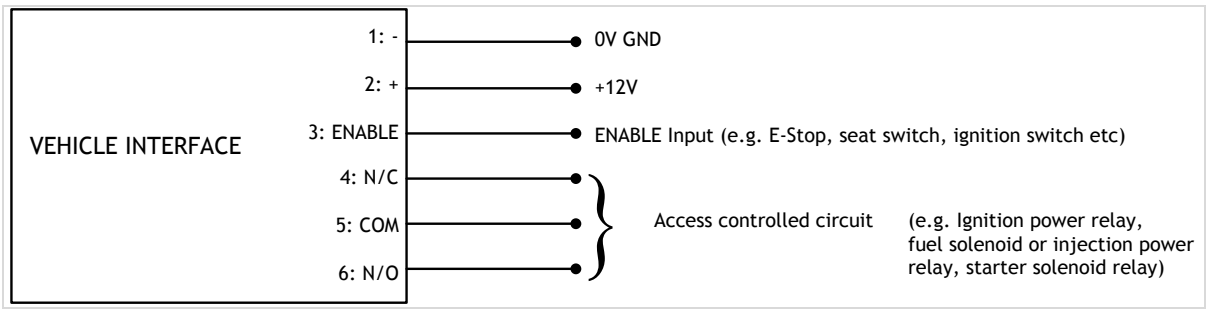

Figure 7: Connecting an APP103

The enable connection is used to provide a signal to the AccessPack to commence looking for an access card.

3.2.6.3 2nd Generation APP103 Board Connections

The second generation of the APP103 Vehicle Board comes in a physically larger ABS box (rather than aluminium) and includes mounting tabs on each side. It's sticker clearly states that it is a APP103 Vehicle Kit (as opposed to the 1st generation design that did not contain these markings).

The second generation APP103 vehicle kit can either enable the accessories or crank the engine, depending on how it is connected.

Cable Number	*Label*	*Description*
1	GND	Ground connection
2	12-48V	Power connection 12-48VDC
3	ACC	Relay Output to Start Accessories
4	CRANK	Relay Output to Start Crank
5	ENABLE	Input to initiate looking for an access card
6	HEARTBEAT	Periodic input to check that access should be maintained

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3.2.6.4 2nd Generation APP 103 Wiring Connections

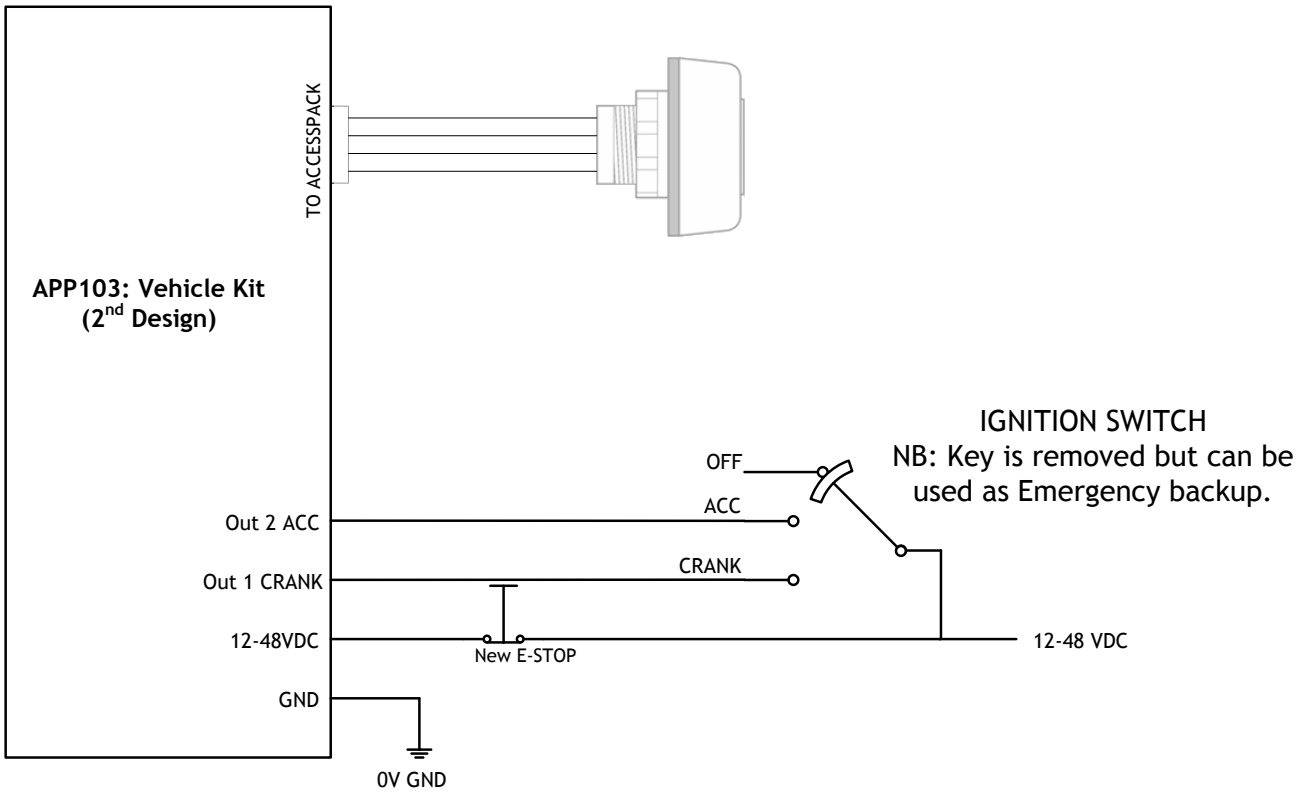

Figure 8: Connecting a 2nd Generation APP103 Kit

3.2.6.5 3rd Generation APP103 Board Connections

The third generation of the APP103 Vehicle Board comes in a physically larger metal box with a large ruggedized cable assembly and bigger relays than previous versions . It can be configured with voltage free contacts, or as a common supply, dual output system.

APP103 is suitable for interfacing with both electric and internal combustion engine vehicles.

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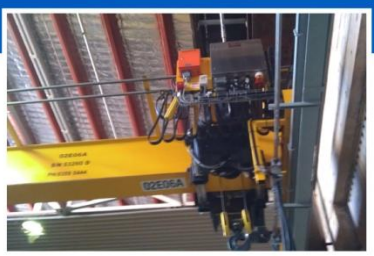

Cable Colour	*Label*	*Description*
Green /Yellow	GND	Ground connection
Brown	ACC	Relay 1 (N/O) (Acc circuit)
Orange	COM ACC	Relay 1 Common
White	CRANK	Relay 2 (N/O) (Crank circuit)
Red	COM CRANK	Relay 2 Common
Blue	ENABLE	Pull high to disable

3.2.6.6 3rd Gen APP103 Wiring Connections for Electric Vehicles

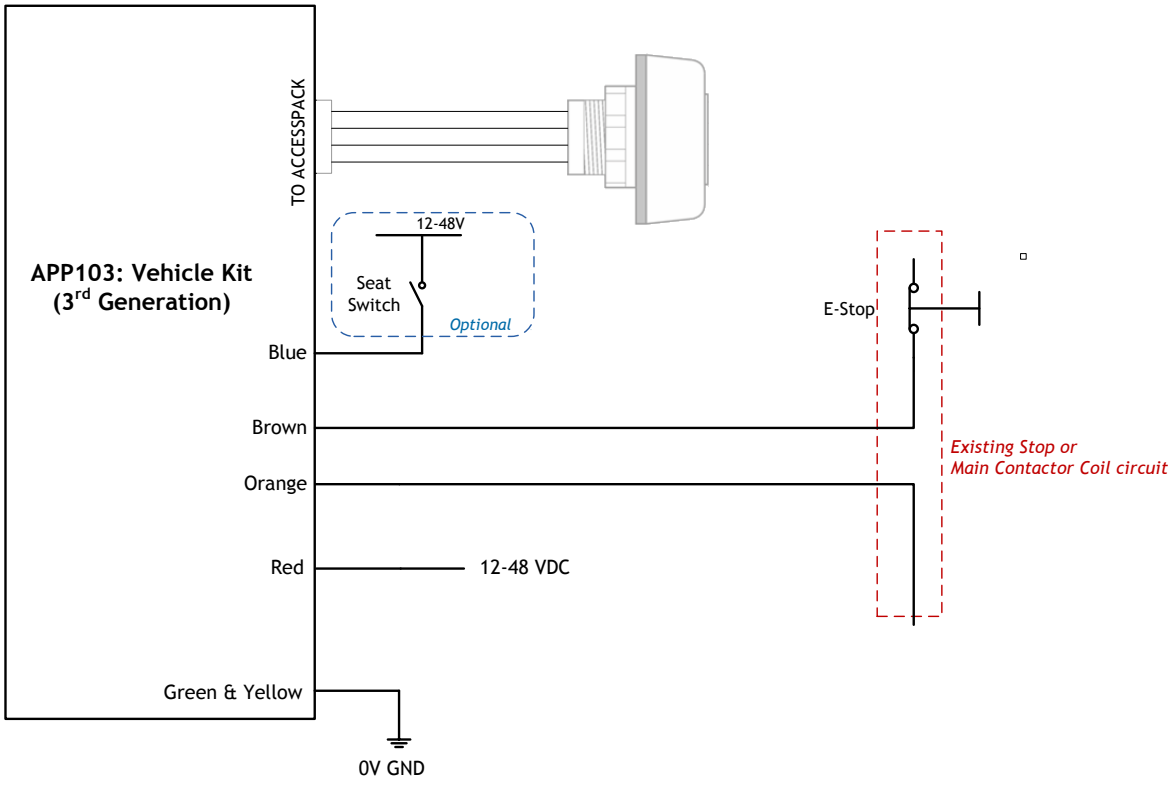

Figure 9: Example wiring for an electric vehicle

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3.2.6.7 3rd Gen APP103 Wiring Connections for Vehicles with IC Engines

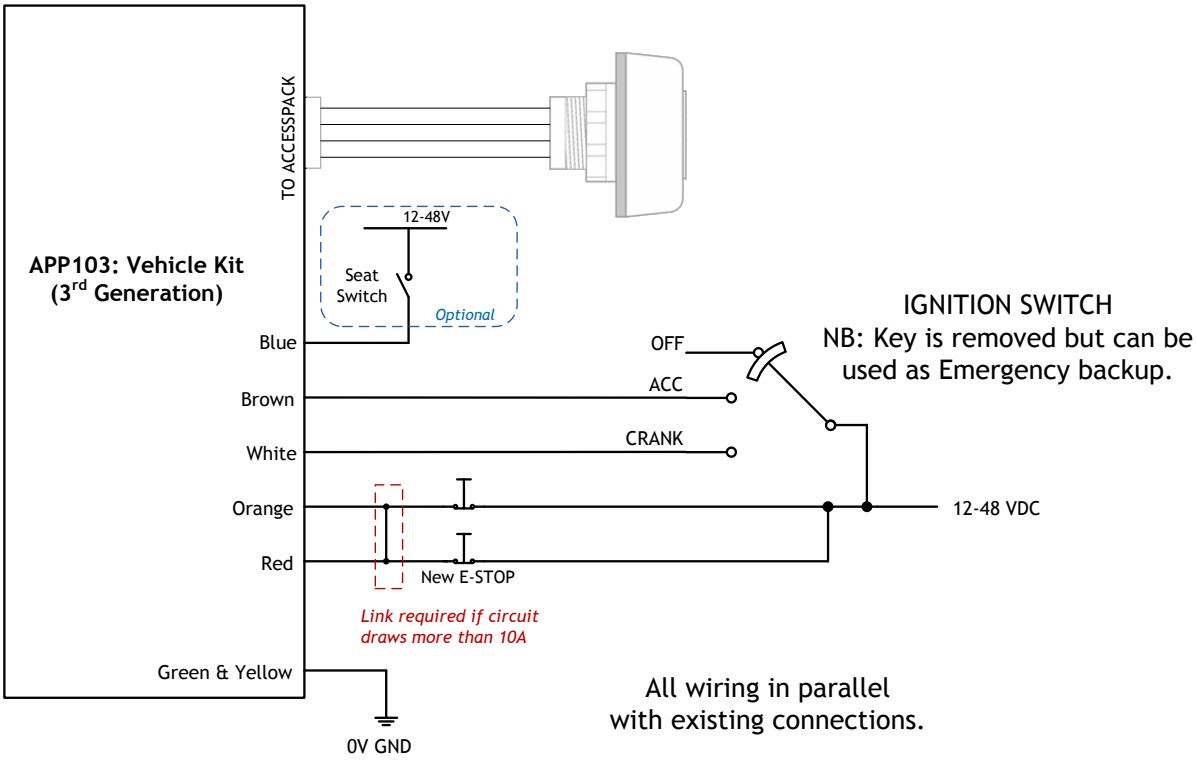

Figure 10: Example wiring for a vehicle with an IC Engine

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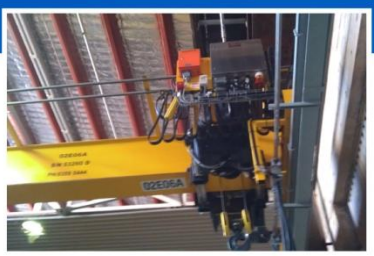

3.2.7 AccessPack with Door Board (APP105)

3.2.7.1 Door Board Connections

Cable Number	Label	Details
1	GND	0V
2	12VDC	9-18VDC with enough current to operate the door strike
3	Strike +	Output to door strike unit
4	Strike -	

3.2.7.2 Typical APP105 Wiring

Typical wiring for connecting an AccessPack to an electronic door strike is provided in Figure 11.

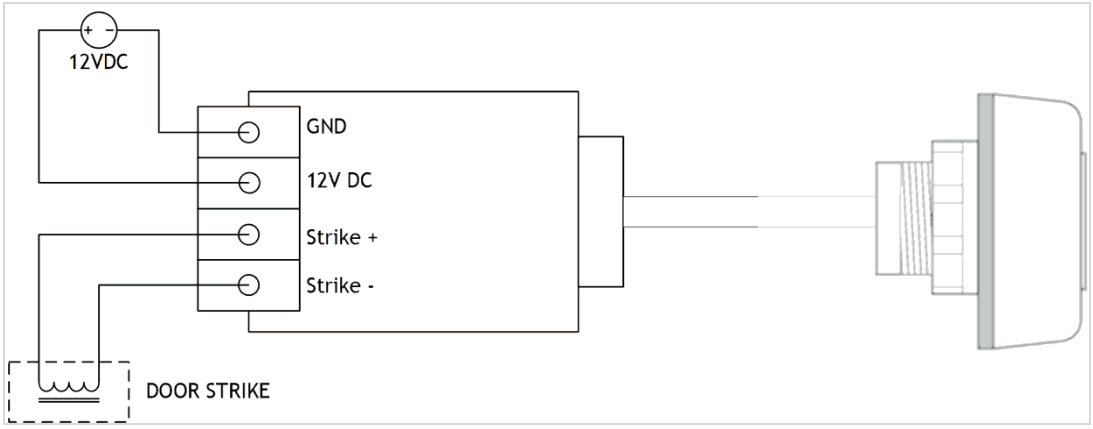

Figure 11: Example of how to connect an APP105

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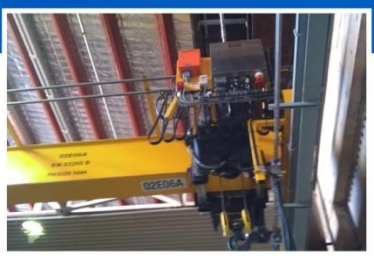

3.2.8 AccessPack with Fixed Equipment Board (APP106)

3.2.8.1 Fixed Equipment Board Connections

This model of AccessPack is usually used for controlling access to 3-phase contactor started machines or single phase switched circuit equipment.

Label	*Details*
START	8A 440VAC, Replaces start or power switch
N (Neutral)	24-240VAC Neutral
A (Active)	24-240VAC Active
STOP	To second switch block on E-Stop switch

3.2.8.2 Example APP106 Wiring Diagram

For a typical 3-phase motor wired as shown in Figure 12, then an example of how you can connect the APP106 model AccessPack is provided in Figure 13.

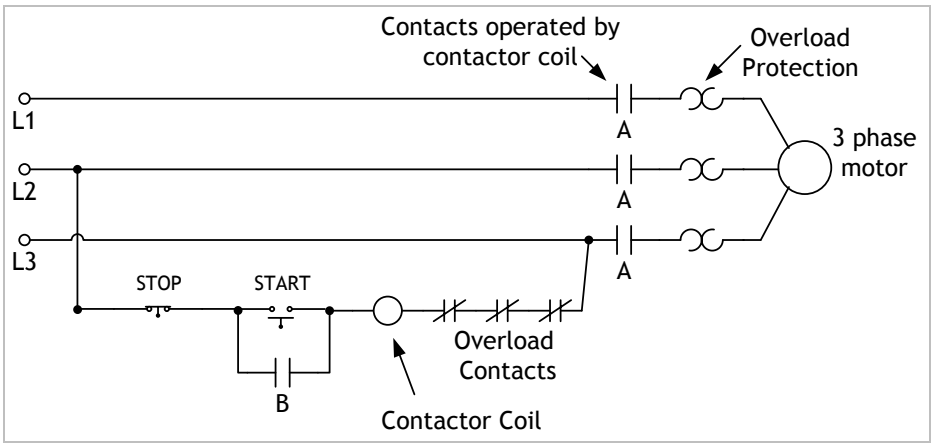

Figure 12: Typical 3 phase motor setup

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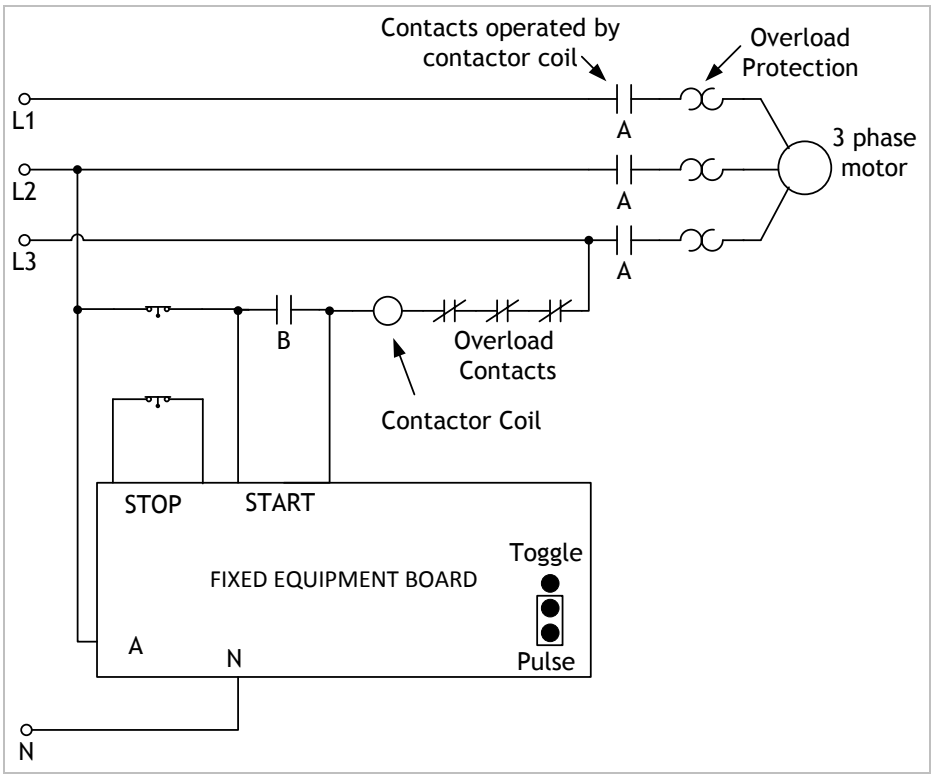

Figure 13:
Example of how to connect an APP106 to a typical 3-phase machine as per Figure 12.

3.2.9 AccessPack with Fixed Equipment Board, Case Type 1 (APP107)

3.2.9.1 Fixed Equipment Board Connections

This model of AccessPack is typically used to control access to single phase machines without an existing push-button E-Stop.

Label	*Details*
START	8A 440VAC, Replaces start or power switch
N (Neutral)	24-240VAC Neutral
A (Active)	24-240VAC Active
STOP	To second switch block on E-Stop switch

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3.2.9.2 Example APP107 Wiring

An example of how a model APP107 AccessPack can be installed on a single phase electric machine is provided in Figure 14. Note that the E-Stop is already prewired to the button on the fixed equipment case.

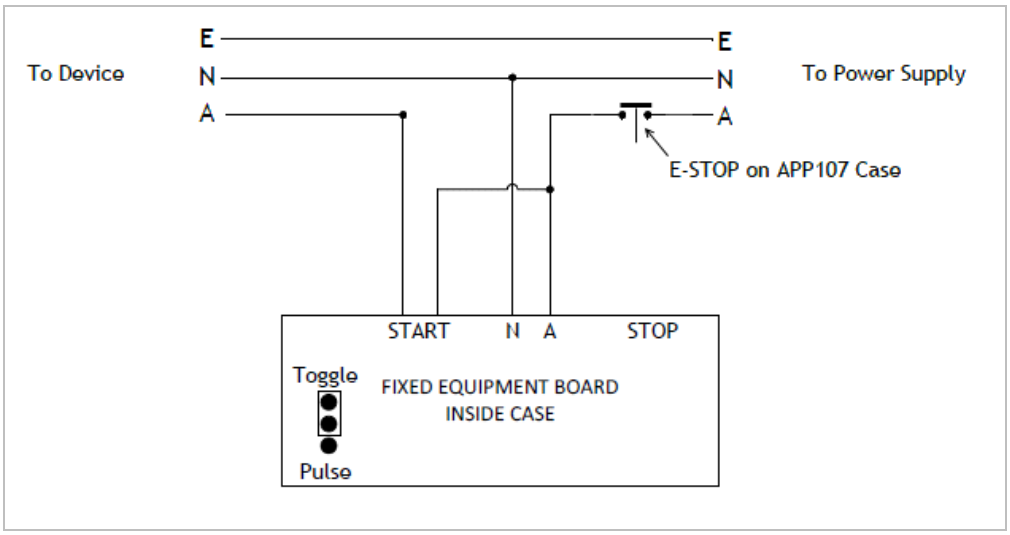

Figure 14: Example of how to wire an APP107.

3.2.10 AccessPack with Fixed Equipment Board, Case Type 2 (APP116)

3.2.10.1 Fixed Equipment (BOM) Board Connections

This model of AccessPack is usually used for controlling access to 3-phase contactor started machines or single phase switched circuit equipment with a separate start and E-Stop button. It is a variant of APP106 with an additional prewired emergency stop and enclosed in a case. This is the model typically supplied for Break Out Machines.

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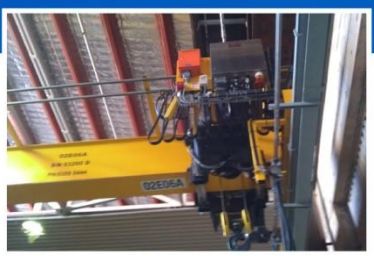

Label	*Details*
START	8A 440VAC, Replaces start or power switch
N (Neutral)	24-240VAC Neutral
A (Active)	24-240VAC Active
STOP	To new E-Stop switch (prewired)

3.2.10.2 Example APP116 Wiring for BOM

An example of how a model APP116 AccessPack can be installed in a break out machine (or other 3-phase machine with separate start and stop switches) is provided in Figure 15. Note that the replacement E-Stop is already prewired to the cable emanating from the case.

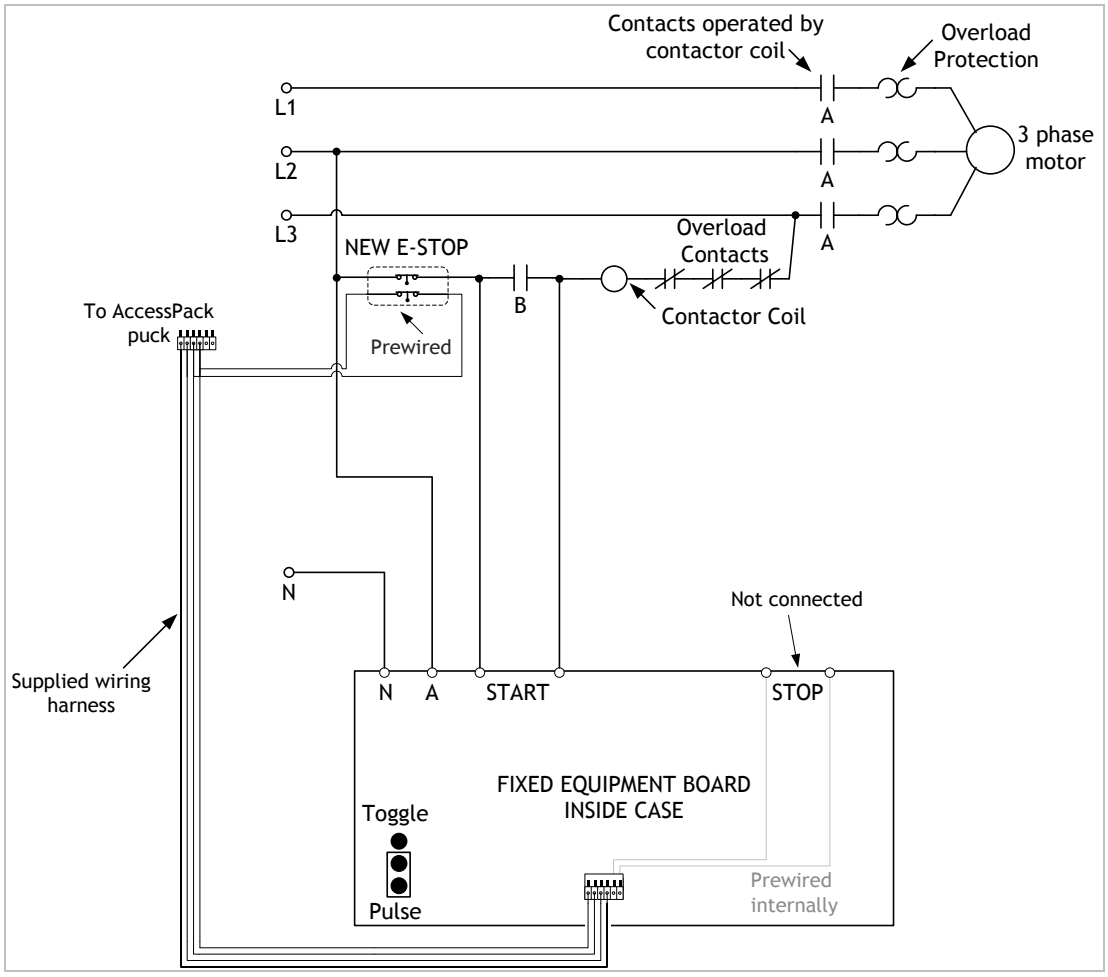

Figure 15: Example of how to wire an APP116.

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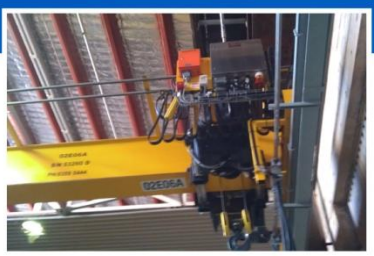

3.2.11 AccessPack with PC Kit (APP108)

3.2.11.1 PC Kit Connections

The PC Kit fits into a USB slot onto the machine. The other end is connected to the AccessPack, which is mounted where desired. There is no further wiring.

To configure the computer to operate using an AccessPack, download and run the AccessPackPC utility, which is available from the AccessPack webpage: www.soledigital.com.au/accesspack.html

3.2.12 AccessPack with VFD Kit (APP109)

This AccessPack kit is physically identical to a APP100 kit (AccessPack with wiring harness) used for some types of crane radios.

The only difference is that the AccessPack itself may be preconfigured with slightly different timeout settings. However, these can always be altered using the FSU program as described in the following sections of this manual.

3.2.12.1 VFD Kit Connections

Wire colour	*Details*
Red	4-12V DC
Black	Ground
Yellow	E-Stop (Active high)
Orange/Coral	Start (NPN)
Blue	Not connected
Green	Not connected

For examples on how to install an AccessPack on different types of variable frequency/speed drive, see the application note:

http://www.soledigital.com.au/docs/AccessPack_VFD_control.pdf

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3.3 Note for Installing AccessPack on Critical Equipment

Although failure rates on electronic devices such as AccessPack are incredibly low when subjected to normal operating conditions, they are not zero. Severe temperature fluctuations and/or mechanical mishandling further increases the risk of failure.

If downtime incurred by an AccessPack failure is absolutely unacceptable, we recommend fitting a key switch (or similar device) in parallel with the AccessPack to allow the protected equipment to be used if/when a problem occurs. The end user should conduct a risk assessment to decide whether this is appropriate for their site.

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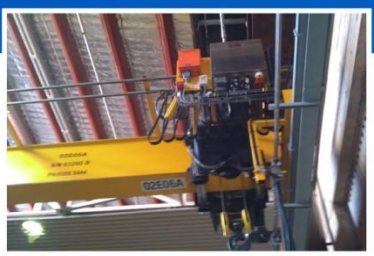

4 BASIC COMMISSIONING DETAILS

The AccessPack is designed to be commissioned using a laptop computer. You will need a LINK-2 Bluetooth Modem and the Field Service Utility (FSU) software application loaded on a laptop.

4.1 Installing and Launching the FSU Application

4.1.1 FSU Program Installation

Ensure that your computer is switched on, connected to the internet and that the minimum required software versions are installed (see Appendix B for minimum system requirements). Ensure that the LINK-2 modem is installed and that the drivers have loaded.

4.1.2 Installing the FSU Application

The latest FSU software can be downloaded from http://www.soledigital.com.au/AccessPack.html.

You should check this location periodically for updates.

4.1.3 Launching the application

Double click on the CASWA FSU program icon: . You'll find it in the programs folder of your start menu.

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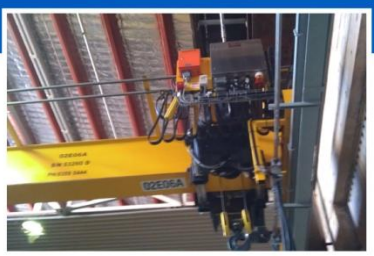
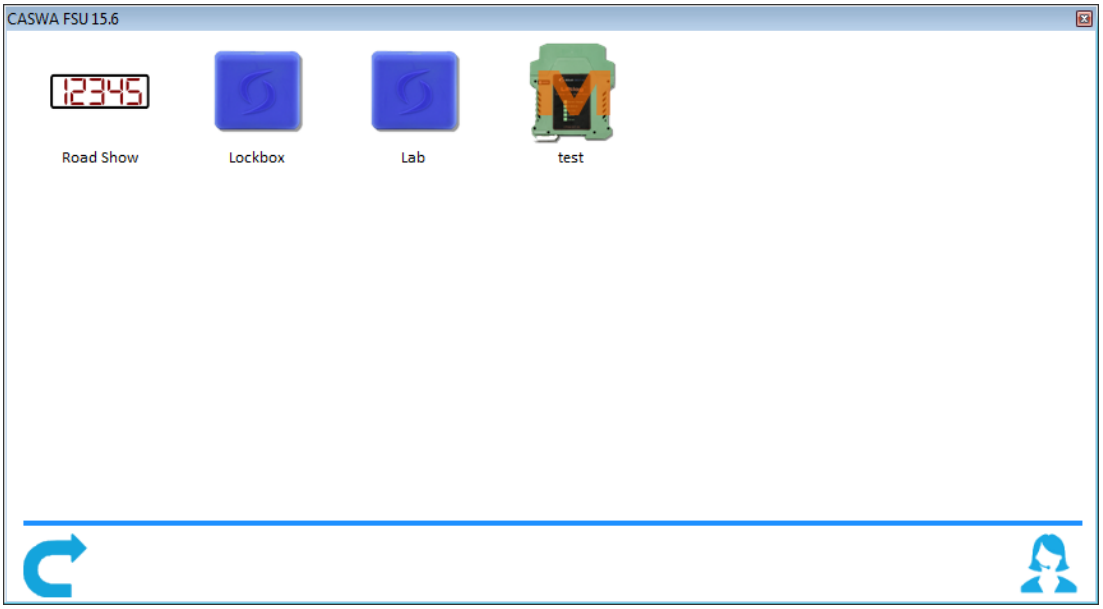


4.2 Connecting to the Device

The FSU will scan for Bluetooth enabled devices. This process takes approximately 10 seconds, when complete a list of all CASWA devices within range will be displayed. AccessPack units are displayed by a icon.



If a particular AccessPack unit is not found, ensure it is powered up and press the icon to repeat the search.

NB: The Bluetooth link between the Laptop using a Link-2 and an AccessPack has a range of approximately 100m.

Select the AccessPack you wish to configure by double clicking on the relevant icon.

4.3 Managing Firmware

If you running an older version of the FSU application on your laptop then you should update this before continuing.

The process for updating the firmware on your Sole Digital device has changed.

Firmware should only be updated if you:

a) specifically want a new feature that is only available in later versions;
b) are experiencing a problem that has been rectified by a later version;
c) are experiencing a problem and need to roll back to an earlier firmware version that didn't cause the problem you are experiencing; or

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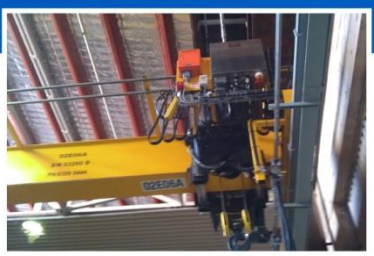
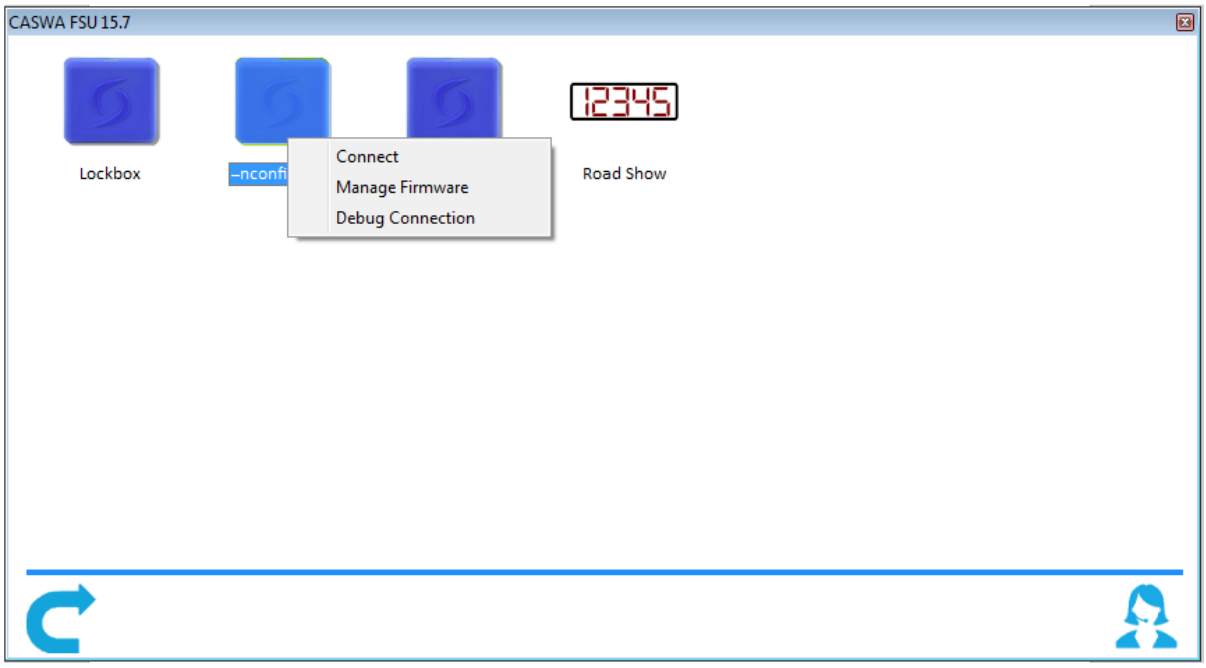
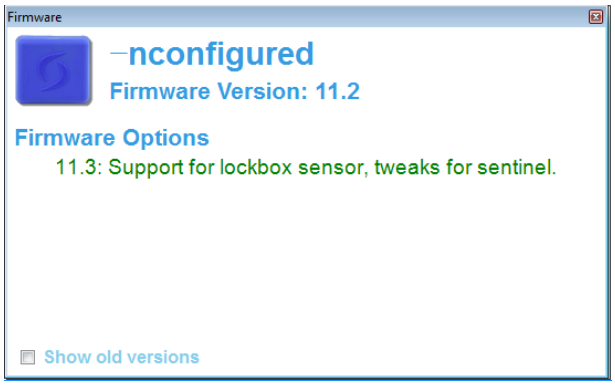


d) have been specifically instructed to do so by your AccessPack supplier.

To check for new firmware versions or to access old firmware versions, return to the Device Display screen and right click the desired equipment icon. Select 'Manage Firmware'.



A new window will popup and show the FSU software connecting to the device. When this is complete, the window will show the name of the device, its current firmware version and a list of newer firmware that is available for the device.



If you need to roll back to an earlier version, check the 'Show old versions' box in the lower left corner of the window.

Select a firmware version and then press the <Apply firmware> button that appears in the lower right corner of the window:

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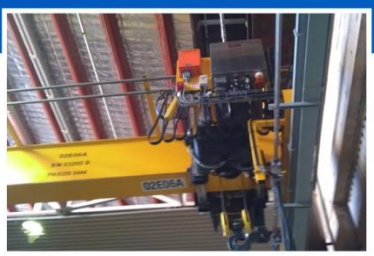
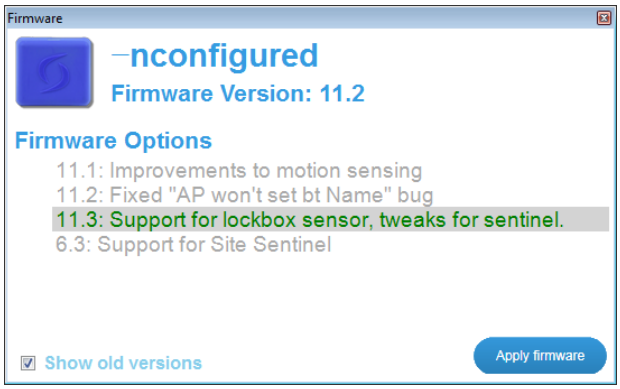
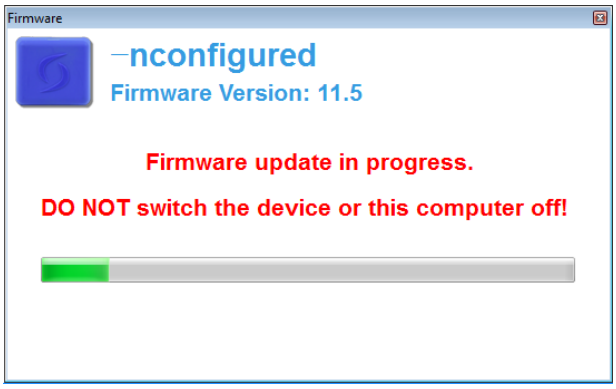


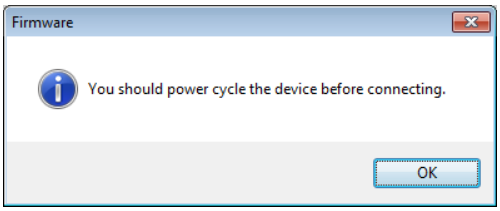


The display will change to the following:



As the message states, **DO NOT switch off the AccessPack or the computer running the FSU software, or remove the Link2 modem** until you are told to do so. If either device loses power then the AccessPack may become unusable and the device will need to be returned to your supplier for repair.

When the firmware has finished updating successfully you will see a Success message in the popup window and also be told to power cycle the device before reconnecting:



Close this window, wait for the manage firmware window to close (this may take 20 seconds) and power cycle the device as instructed. You will be returned to the first FSU screen, Manage Connections.

Wait a few seconds after power cycling the device and then select the device you wish to connect to by double clicking the device.

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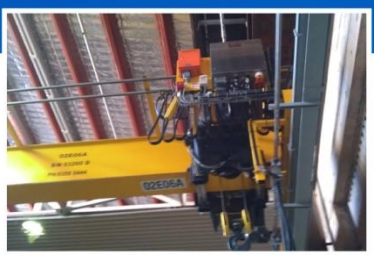
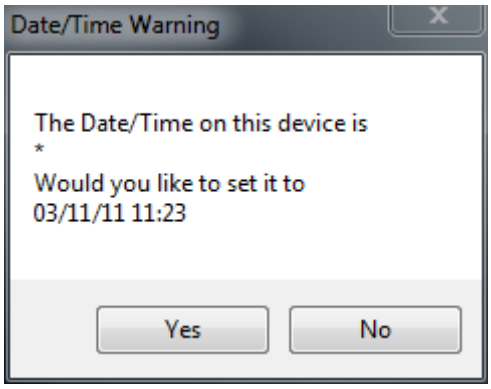


4.4 Checking the Date and Time

After selecting the device, the FSU application will automatically verify whether the AccessPack has the same date/time as the computer running the FSU application.

If the times are not the same, the following pop up window will display on the screen:

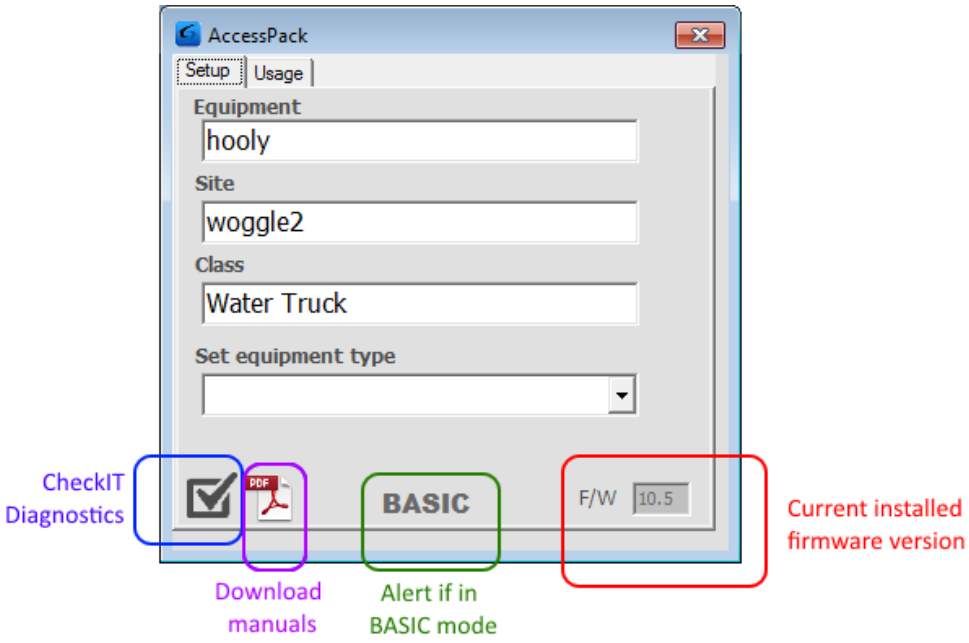


Press <Yes> to update the devices date/time or press <No> to leave the date/time on the device as it is.

NB: If you did not see this window, then your device has the same date/time as your computer.

4.5 Basic Setup

Once firmware versions and date/time has been verified, the following screen will appear.



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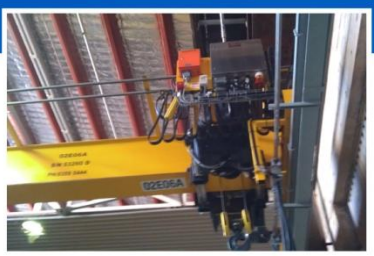
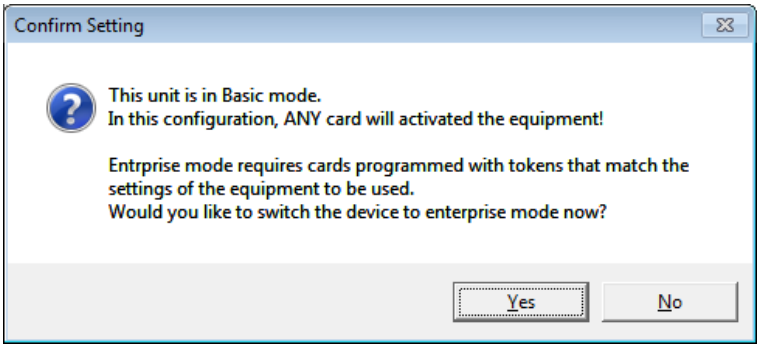


If the AccessPack is in Basic mode (where any card will activate the device), this setup window will immediately be followed by a warning message:


Confirm Setting
This unit is in Basic mode.
In this configuration, ANY card will activated the equipment!
Entrprise mode requires cards programmed with tokens that match the settings of the equipment to be used.
Would you like to switch the device to enterprise mode now?
Yes
No

Leave the device in Basic mode if you wish to enable any RFID card to grant access to the controlled device. In this mode only the card serial number is recorded. This is useful when you are first commissioning the device and have not yet programmed cards. Select Enterprise mode to enable the use of the AccessPack Manager to configure permissions to individual devices. You can change the mode at any time through the Card tab (see Advanced Commissioning Details).

The 'Setup' tab allows you to configure:

- The name of the equipment;
- The location (site) of the equipment;
- The class of the equipment;

NB: This information MUST EXACTLY MATCH the entries for the equipment in the database and is usually provided to you by your equipment vendor.

Any changes to these fields will be automatically saved once you exit the field.

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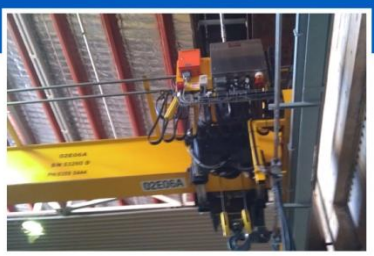
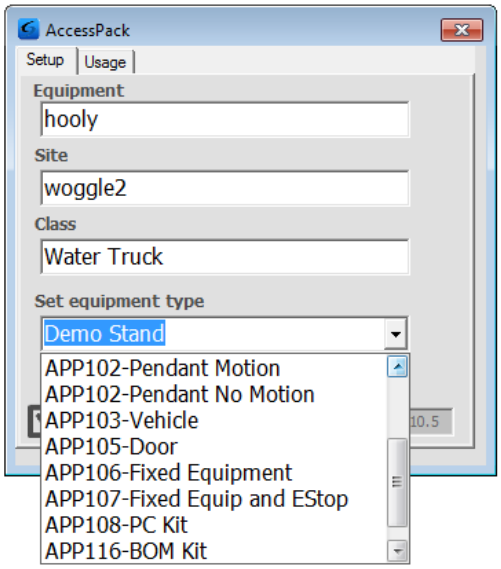


4.5.1 Applying Basic Settings

The easiest way to configure an AccessPack is to load a set of basic presets associated with its Equipment Type.

To do this, select the appropriate equipment from the 'Set Equipment Type' field:



A popup box will appear asking you to confirm that you wish to configure the AccessPack as this type of equipment.

Pressing <Yes> will overwrite the existing settings on the AccessPack and close the Popup box. A message box will confirm that the settings have been saved.

Alternatively, pressing <No> will close the box without making any changes.

The equipment type that was applied will be shown in the Set Equipment Type field.

Note: If this field is blank then this AccessPack's settings do not match any current preset file. This may be because the settings were tuned using the Advanced Configuration options or that the standard preset file has changed since the preset was first applied.

Changing the settings using the 'Set Equipment Type' presets will not make any changes to the maintenance parameters or binding to a logger. By default these are not enabled.

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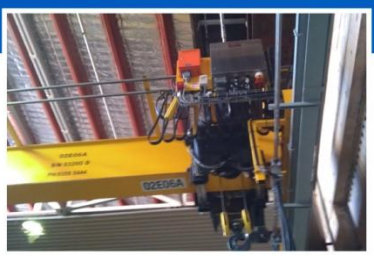
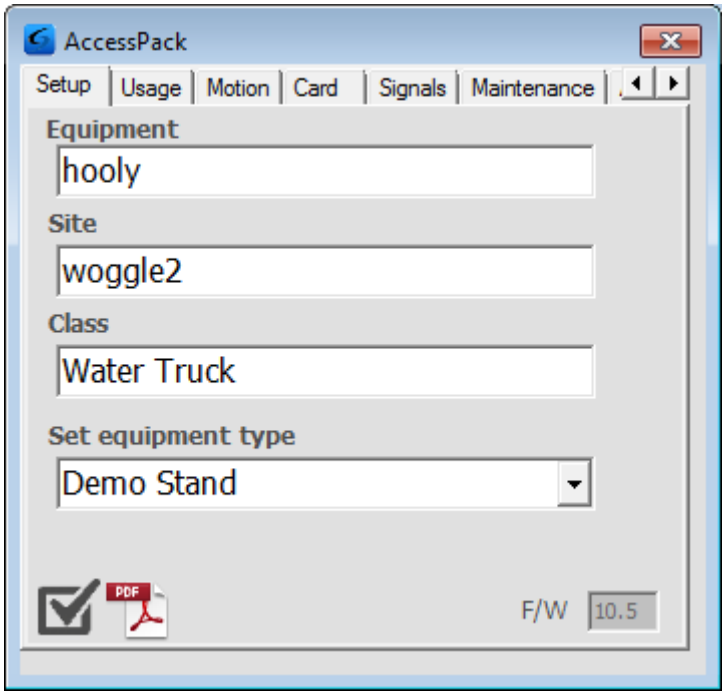


5 ADVANCED COMMISSIONING DETAILS

By default, AccessPack behaviour settings are hidden from view.

To tune individual configuration settings, or activate/change other features such as maintenance intervals, press <CTRL-A>. A number of other tabs will appear:



Access the advanced commissioning tabs if you want to:

a) set maintenance intervals and lockout behaviour;
b) tune motion thresholds if the AccessPack is not behaving as required **after** applying one of the basic presets;
c) change how the AccessPack reads the user's RFID cards (e.g. when using some building access cards);
d) change the mode of AccessPack operation from Enterprise to Basic mode;
e) save a new preset;
f) bind to a datalogger;
g) add/remove Tag Out without using a Magic Card; OR
h) set mandatory token types.

If you are not doing any of these things, then the basic configuration options available through the Setup tab should be sufficient to commission this device.

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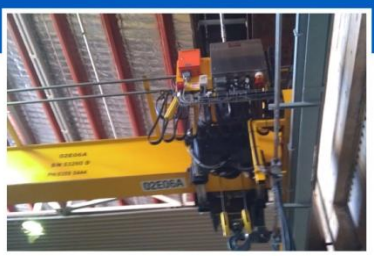
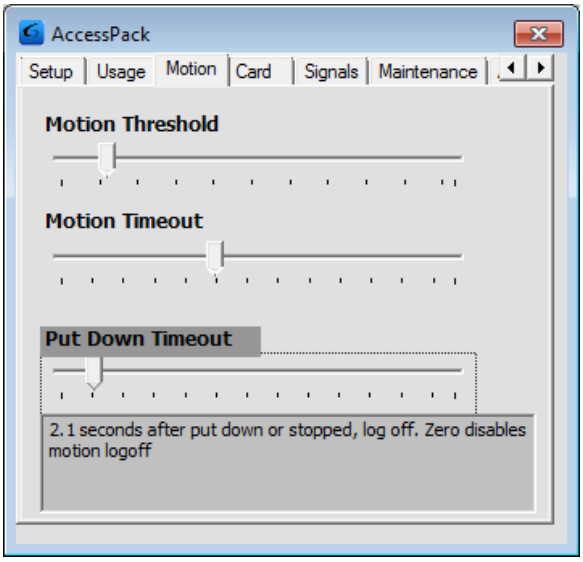


5.1.1 Motion Tab

This tab displays sliders that adjust parameters relating to the AccessPack's motion detection hardware. Simply touch the slider to change the value. A text box at the bottom of the page contains an explanation of each parameter and its current value.



5.1.1.1 Motion Parameters

Motion Settle Time is the amount of time the AccessPack will wait after logging on or off before beginning to look for motion. It is typically set to a low value.

Motion Threshold is the basic sensitivity of the motion system. Smaller numbers are more sensitive; 10-20 are typical values. In use, the AccessPack also dynamically adjusts the basic motion sensitivity to eliminate the chance of inadvertent logouts.

Motion Timeout sets the time between the AccessPack motion system detecting stillness and the beginning of the Put Down timeout. Set this to a larger value if the unit will be periodically put down for a few seconds.

Put Down Timeout sets the time the red LED will flash (after the motion timeout has expired) before the AccessPack will log the user out. In Door Mode this parameter sets how long the door is held unlocked after an authorised card swipe.

5.1.1.2 Setting up motion detection

To manually tune motion detection, first set the Motion Timeout to 1 or 2 and the Put Down Timeout to about 200. The swipe a valid card to activate the AccessPack.

This will cause the AccessPack to flash the red LED whenever it thinks it is motionless.

In addition to the red LED being off, the motion icon will appear at the bottom of the screen when AccessPack senses motion.

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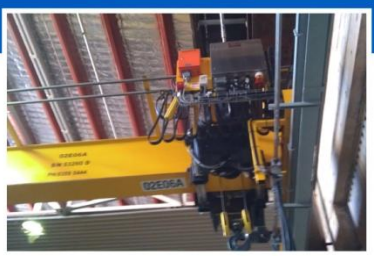
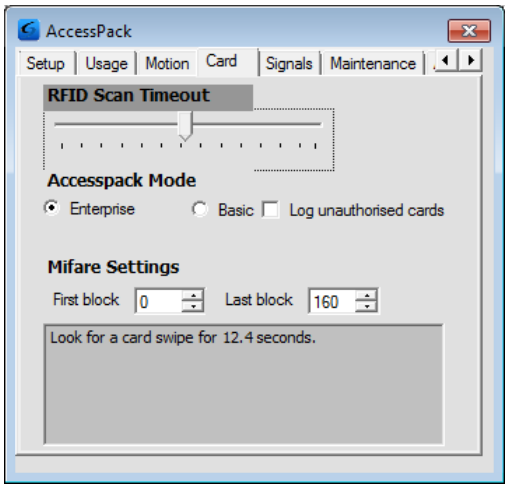


You can now adjust the Motion Threshold (i.e. the sensitivity of the system) to a level appropriate for the installation. When you are happy with the sensitivity, adjust the Motion Timeout and Put Down Timeout as required.

5.1.2 Card Tab



This tab displays sliders that that adjust parameters relating to the AccessPack's card reader. Simply touch the slider to change the value. A text box at the bottom of the page contains an explanation of each parameter and its current value.

5.1.2.1 Card Parameters

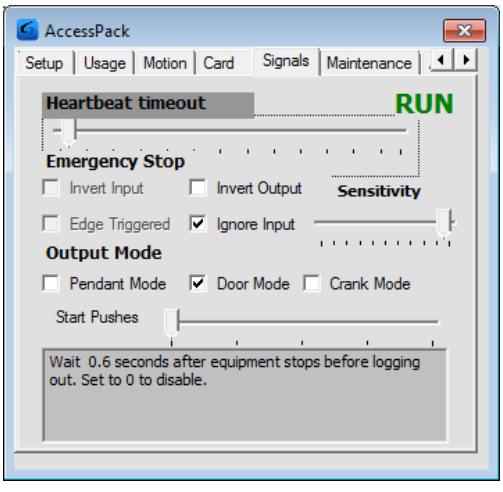
RFID Scan Timeout sets the length of time the AccessPack will look for a valid card before returning to an idle state. Setting this value to zero will disable the return to idle and the AccessPack will scan continuously for a card.

AccessPack Mode: Select Basic mode to enable any RFID card to grant access to the controlled device. In this mode only the card serial number is recorded. Select Enterprise mode to enable the use of the AccessPack Manager to configure permissions to individual devices.

Log Unauthorised Cards: Checking this box will cause the AccessPack to record the names or serial numbers for both accepted and rejected card swipes.

Mifare Settings: These settings configure the AccessPack to use only part of the space on the swipe card. This is usually done to allow a customer's existing access card to be used with the AccessPack system. They should be set to 0 and 160 (as shown) unless directed by the AccessPack Support desk.

5.1.3 Signals Tab



This tab displays parameters relating to the AccessPack's inputs and outputs.

A text box at the bottom of the page contains an explanation of the parameter and its current value.

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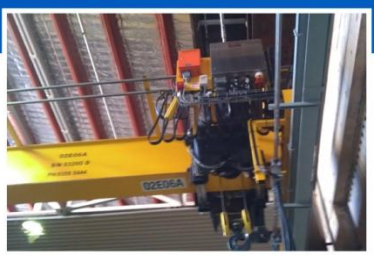
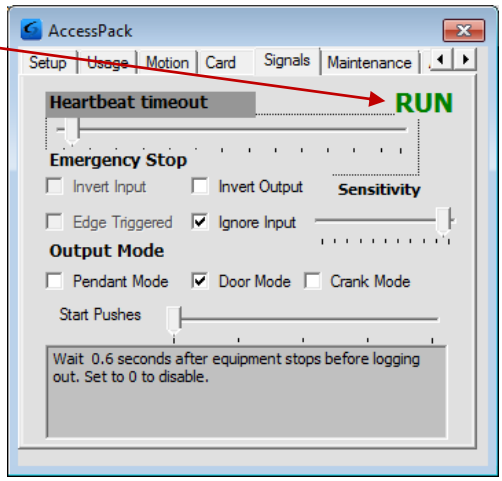


The current status of the AccessPack is also shown.



5.1.3.1 Signals Parameters

Heartbeat Timeout:

This slider sets the time after detecting a heartbeat signal (a flashing LED, a closed set of contacts etc) that the AccessPack will consider the equipment to have stopped or timed out. After the Heartbeat Timeout has expired, the user is logged out**.** Simply drag the slider to change the value.

Emergency Stop Behaviour:

These fields configure how the AccessPack behaves when the Emergency stop signal is detected.

Invert Input inverts the polarity of the EStop/Enable input signal.

Invert Output inverts the polarity of the EStop/Enable output signal.

Sensitivity is the amount of time that the E-Stop input has to be active before this signal is registered. Decrease this if you suspect noise on the E-Stop is causing the AccessPack to log off by dragging the slider to the left.

Edge Triggered configures the AccessPack to log out the user only when the E Stop signal transitions from not stopped to stopped. After logging out and disabling the equipment, the AccessPack will immediately start looking for a card. Check this box when the equipment is stationary and has a separate start/stop circuit which will be activated after the user has swiped their card (e.g. Fixed equipment with the AccessPack mounted on the wall). It is recommended that the 'Sensitivity' slider be set to 0 (i.e. Scan indefinitely) and motion sensing disabled when this checkbox is set.

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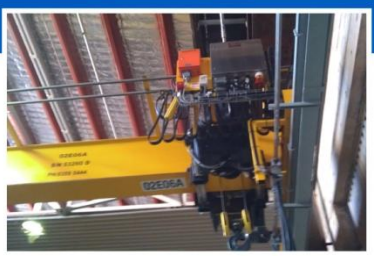


Output Modes:

These configure how the outputs behave when a card is presented. In the default mode (no boxes selected) the enable/E-stop is asserted and the start button pulses a number of times as defined by "Start Pushes".

Start pushes: Sets the number of times the start output will be pulsed when the AccessPack is activated. When set to > 1, then the sequence is as follows:

- 600mS pulse.
- 500mS Pause.
- 2500mS pulse.
- 500mS Pause/600mS pulses repeated

Alternative output modes are:

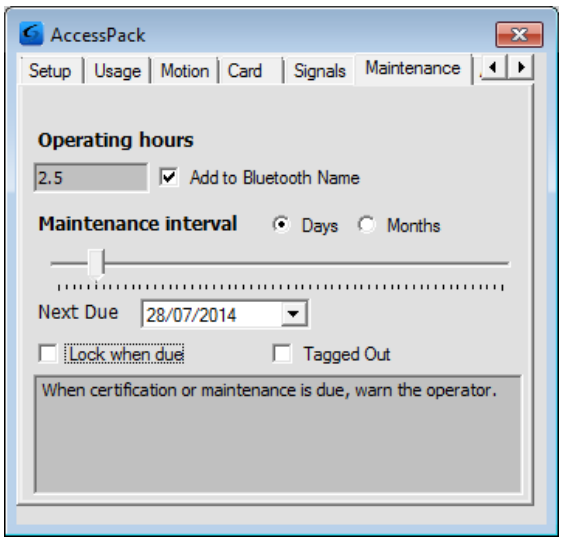
Pendant Mode: When unchecked, output 1 will toggle high or low to indicate the current locked/unlocked status of the AccessPack. When checked, output 1 will pulse high for one second when a user logs on. This output is used to push a start button.

Door Mode: When Door Mode is checked, the Estop output (output 1) will pulse for the duration set by “Put Down Time Out” (This appears in place of "Start Pushes" when Door Mode is first checked). It will also not be possible to bind an AccessPack to a logger (see General Tab) in Door Mode.

Crank Mode: When Crank Mode is checked, the Start button is be enabled for as long as a card is held in front of the AccessPack. This is typically used to crank an engine instead of turning a key.

5.1.4 Maintenance Tab

The Maintenance tab allows you to view the total operating hours of the equipment.



This tab also allows you to set a mandatory Maintenance interval (if desired). When the selected date is reached and the maintenance interval is >0, the AccessPack will either continuously flash both LED’s at the same time to alert the user that the equipment’s maintenance period has expired or lock out the equipment (by declining any access requests after the due date).

The AccessPack will remain in the alert/locked state enabled until the maintenance due date is reset. This can be done by changing the date using the FSU

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application or by swiping a specially issued recertification card. If using the latter, the <Next Due> date will be set to the current date (date that the recertification card is presented) plus the <maintenance interval>.

5.1.4.1 Run Hours Parameters

Add to Bluetooth Name causes the total operating hours to be appended to the Bluetooth name of the device. This allows the run hours to be read with any mobile phone or laptop. Under normal conditions, the run hours will be updated twice a day.

Maintenance interval: This slider changes the required periodicity of re-certification or maintenance. If set to zero, alarming or lockout due to overdue certification will NOT be enabled.

Next due is the date by which mandatory certification or maintenance must be performed. If blank, alarming or lockout due to overdue certification will NOT be enabled.

Lock when due establishes whether, in the event of an overdue certification period, the AccessPack will merely flash to alarm the operators or whether it will actually disable the equipment

Note: This option should only be selected following a risk assessment that confirms that there is no possibility for unsafe conditions arising as a result of the equipment being locked out.

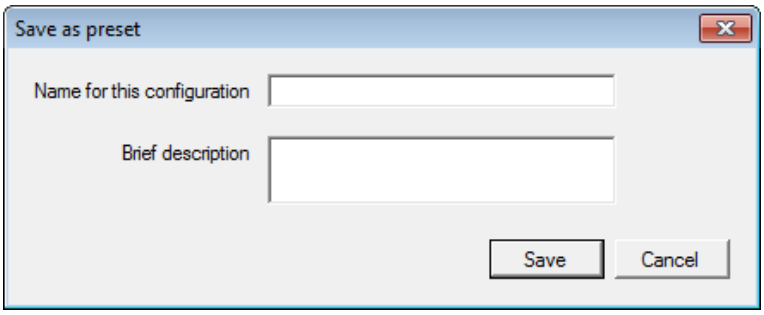
Tagged Out is checked when the protected machine is not to be used by anyone (e.g. out for maintenance). The AccessPack will flash both LEDs simultaneously to alert operators of this state. This check box can be checked/unchecked by swiping a Tag Out Magic Card.

5.1.5 Advanced Tab

5.1.5.1 Save Settings as a Preset

If you have changed the configuration settings from their default values and want to save these as a new type of preset, press the <Save Settings as Preset> button.

A new dialog box will appear:



Enter the name for this configuration and a brief description. Press <Save>.

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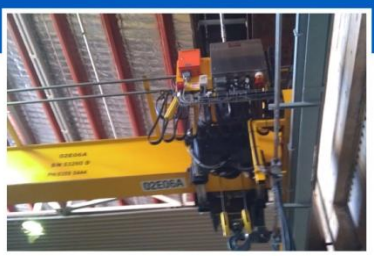


A new preset file (*.ap) with the name you have supplied will be saved in the \Documents\FSUPresets\ folder on the laptop being used to configure the AccessPack. It is saved to your specific directory, so will only be visible to your login.

If you want other people to use this preset file, copy the *.ap file to copied to their Documents\FSUPresets\ folder. You may have to manually create this folder.

To delete the preset, delete the file from that Folder.

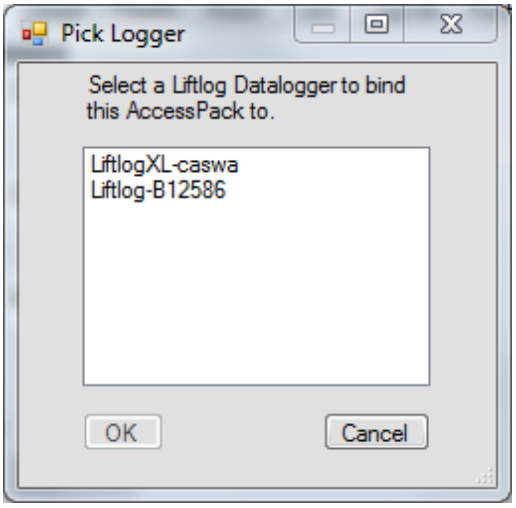
5.1.5.2 Bind to a Logger

Binding an AccessPack to a Liftlog™ or Liftlog™XL data logger, tells the AccessPack to send card swipe information to that logger so that it can record the operator's name along with the usage history of the crane.

First check that the logger is connected, powered up and configured (commissioned). Refer to the Liftlog™ or LiftlogXL user manuals for how to do this.

To begin the binding process, press <Bind to a Logger>.

The following screen will appear:



Select the desired logger to bind to and press <OK>.

If the desired logger is not in the list, check that the logger is power up. Press <Cancel> and repeat the binding process.

NB: If the AccessPack is in Door Mode, you will not be able to bind the AccessPack to a logger as the <Bind to a Logger> button will be disabled. To check whether the AccessPack is in Door Mode, click on the <Signals> tab (see Section 4.5).

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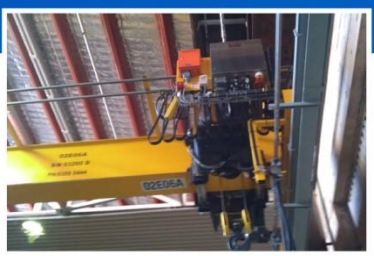
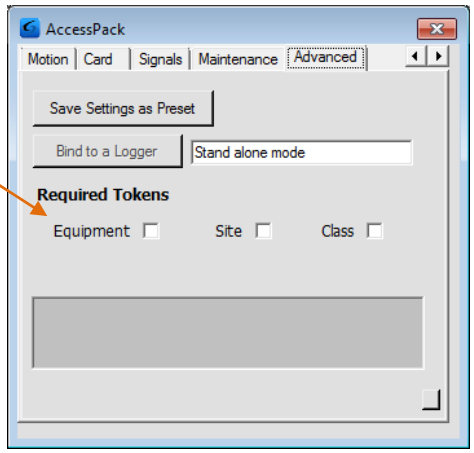


5.1.5.3 Defining Required Tokens

In its default state, the AccessPack authorises use if a card is presented containing any token that matches either the Equipment, Site or Class listed on the Setup tab.

In situations where multiple sets of permissions are required to operate equipment (e.g. A forklift license and a site induction), check the type of tokens that must be present on the card.



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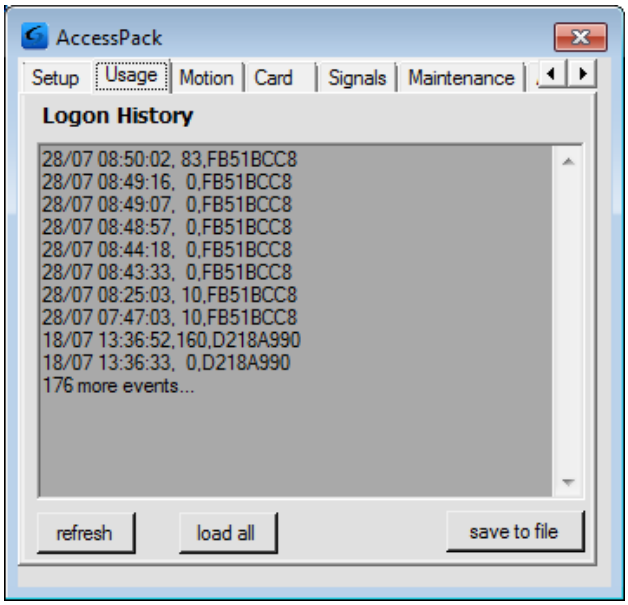
6 DOWNLOADING DATA USING THE FSU

The AccessPack can currently store approximately 200 events in its onboard memory.

Data can be downloaded from the AccessPack using the FSU application. (This may be required if you do not have a Site Sentinel that automatically uploads the logon history to a secure webpage.) Refer to section 4.1 for downloading an installing the FSU application. Connect to the desired AccessPack as detailed in 4.2.

Select the Usage tab:



A list of users who have recently activated the AccessPack will be displayed. Only the most recent 10 records are shown initially.

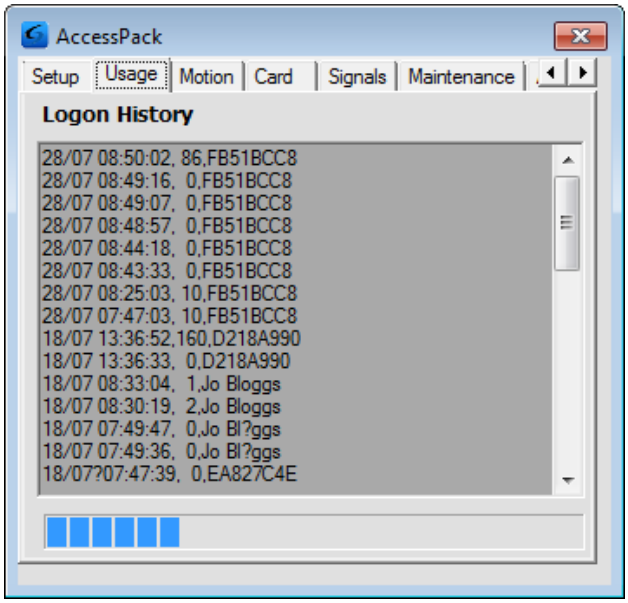
Depending on the model of AccessPack, it may also show the date and time of each access and whether the user's card was accepted or rejected.

The <refresh> button updates the logon list in the event that another operator has logged on while connected to the AccessPack.

The <save to file> button commences a dialogue to save the list to a text file on the computer.

When the list is long, only first 10 entries are shown and the load all button is activated.

Press <load all> to load the remaining entries:



A blue progress bar is visible on the bottom of the screen as data is being loaded to indicate how much data has yet to be retrieved.

This may take some time depending on the amount of data stored on the device.

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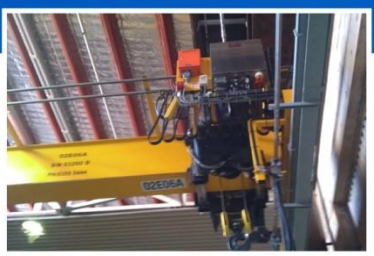

7 ACCESSPACK OPERATION

The AccessPack is used by placing specially configured AccessPack cards[1] over the card swipe target ("swiping"). Swiping range is limited to approximately 20mm.

7.1 Logging On and Enabling Usage

To log on to a piece of equipment fitted with an AccessPack:

1) Press the E-Stop button and keep it depressed.
2) Ensure the equipment is powered up.
    a. As the AccessPack power is first reconnected both lights will flash briefly and then the green light will flash for several seconds while it searches for a Liftlog logger.
    b. If the green light flashes followed by the red light flashing slowly, the AccessPack could not find a logger. The AccessPack will continue to flash the green light followed by slowly flashing the red light at regular intervals (about 30 seconds).
    c. When the green light stops flashing with no slow red flashing, initial communication is complete.
3) Release the E-Stop button. AccessPack will flash the red and green lights alternately indicating that it is ready to read a user card.
4) Swipe a user card by moving card across the face of the AccessPack (see Figure 16). AccessPack will turn the green light on for an authorised card read or turn on the red light for an unauthorised card read.

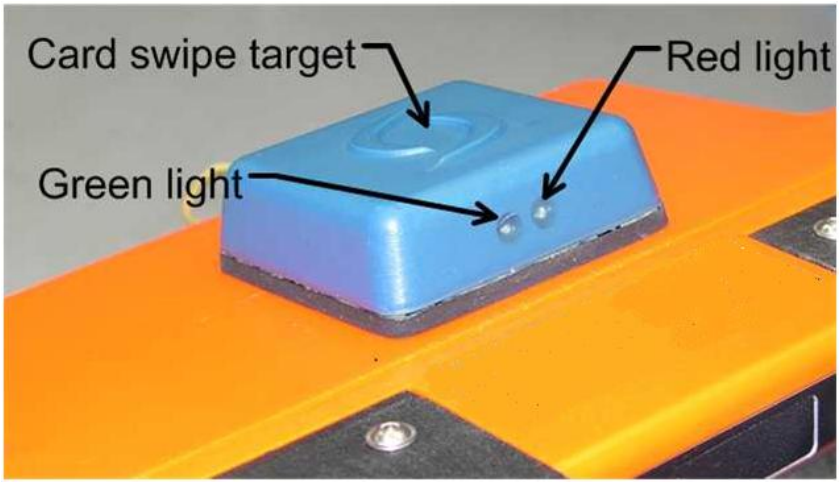

Figure 16: Location to swipe an AccessPack

[1] For information on configuring cards using the AccessPack Manager software see the AccessPack Manager User Guide, available from www.soledigital.com.au/accesspack.html.

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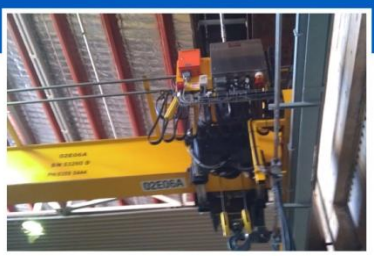

With an authorised card read, the equipment will be enabled by the AccessPack. The equipment will beep (if a beeper is fitted) and the AccessPack green light will flash slowly to indicate that the equipment is operable.

7.2 User Initiated Logging Off

To log off and make the equipment safe:

> Press the emergency stop button (if fitted) or other usual shutdown device (e.g. Power, ignition, or isolation switch).

The current user will be logged off and the equipment made inoperable.

After being logged out, the AccessPack must once again be swiped before the equipment can be used.

7.3 Automatic Logging Off

The user will also be logged out if one of the following occurs:

- the equipment has an inactivity timeout.
- is stationary for a preconfigured period (if motion sensing is enabled),
- The Stop input is connected to a seat switch, pressure pad or some other sensor.

When the AccessPack detects no motion for a configured interval, the red light will flash rapidly for configurable period to warn the user of the impending logout. During this period, moving the AccessPack will reset the timeout period and the operator will remain logged on.

After being logged out, the AccessPack must once again be swiped by a valid card before the equipment can be used.

7.4 Resetting the Maintenance Interval

If a mandatory inspection interval has expired and the '*Lock when due'* parameter has been selected (see section 5.1.4 for more information on setting this parameter), then the operator will not be able to activate the AccessPack and enable operation until the inspection/maintenance/calibration has been performed and the maintenance interval reset using either the FSU application, or the 'Maintenance' magic card.

Swiping a 'Maintenance' magic card will reset the <Next Due> date (as shown on the Maintenance tab of the FSU application) to the PC's current date plus the < maintenance interval>.

7.5 Electronic Tag Out

Swiping the 'Tag Out' card will prevent **all** users from enabling the AccessPack and hence stop everyone from using the protected machine. To re-enable access to authorised users re-swipe the

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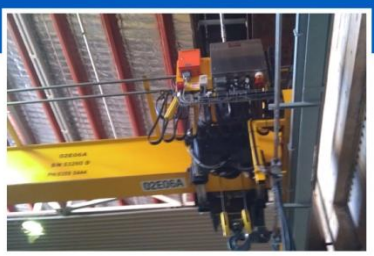

same 'Tag Out' card. Alternatively, this feature can be disabled by connecting to the device using the FSU application and disabling the <Tag Out> check box on the Maintenance Tab.

7.6 Indicator States

The current state of the AccessPack is indicated by two lights flashing in different ways, as described in the following table.

State	LED signals		Flash Rate	Notes
	Green	Red		
Power up	◐	◐	Quick single flash red and green together	
Looking for Liftlog after power on	◐	○	Medium rate	
Cannot find Liftlog	○	◐	Slow	Check Liftlog for powered up state
Idle – logged off	○	○		
Ready to swipe card	◐	◐	Alternating flashing	
Logged on	◐	○	Slow	
Card Accepted	●	○	Light on 2 seconds	
Card Rejected	○	●		See your AccessPack administrator
About to be logged off and logged off (before idle state)	○	◐	Fast	
Maintenance period expired OR AccessPack tagged out	◐	◐	Quick flash red and green together	Will flash continuously until maintenance is performed/ tag removed

● Red light on
◐ Red light flashing
○ Red light off

● Green light on
◐ Green light flashing
○ Green light off

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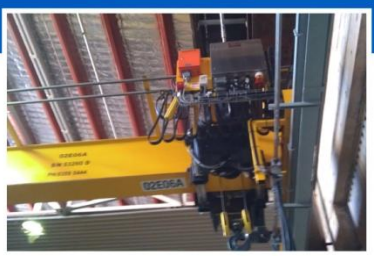

8 TROUBLESHOOTING

Fault	Cause	Fix
No lights when power is applied	No power to AccessPack	Check power output from application board. This should be 5V between RED and BLACK.
Lights flash when E-Stop is pushed in and don't flash when the E-Stop is pulled out	E-Stop setting is inverted	Change the 'Invert E-Stop' setting.
Unit rejects all cards	Incorrect configuration	Check the spelling and capitalisation of the Equipment, Site, and Class settings of the AccessPack. They must match the values on the web site exactly.
	Battery not charged on a radio remote	Charge the battery. AccessPack requires at least 3.3V to operate correctly.
	AccessPack has been swiped with a Tag Out card.	Rectify the equipment fault that initiated the Tag Out. When safe to do so, reswipe the Tag Out card to return the AccessPack to its normal operating mode.
	Maintenance interval has been exceeded and lockout selected (both LEDs will be flashing).	Undertake the required maintenance and then either (a) swipe a Maintenance Card to reset the maintenance period or (b) connect to the AccessPack using the FSU and enter the Next Due date.
Unit accepts all cards	Unit is in Basic mode	Select 'Enterprise Mode' on the card tab of the FSU.
AccessPack starts equipment and then logs off after a few seconds.	Heartbeat timeout is enabled.	If it is not being used, set the heartbeat timeout in the FSU to zero (i.e. disabled).
	Motion timeout settings are incorrect.	Try disabling motion logoff by setting putdown timeout to zero.
Red LED flashes continuously	Insufficient voltage to drive AccessPack.	Check battery or power supply from application board (5VDC between black and red)

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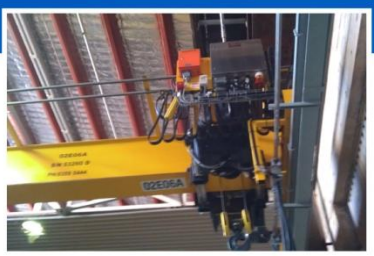

APPENDIX A: COMMUNICATION PROTOCOL

The host sends single character commands to the device to write or query parameters.

Each command must be followed by a carriage return <CR>(ASCII 13).

Where the command is a query command, no arguments are sent and the device will respond with a single line (except for the “u” and “E” commands) the requested value in ASCI text followed by a <CR>.
Where the command is a set command, an argument may be included between the command and the <CR> .

Where numbers are sent or received, they are sent as clear text; eg “1234”

Where a number represents a load (eg the “o” and “O” commands, and the logged data returned by the “u” command), it is expressed in 100Kg units. Eg 3.5mt would be sent and received as 35.

Where a number represents an elapsed time (eg in the logged data returned by the “u” command) it is expressed in 0.1second units. Eg. 35.4 seconds would be sent as 354.

Where dates-time values are sent or received, they are sent in the format dd/mm/yy hh:mm . Hours are in 24 hour clock format. Leading zeros must be used. Eg 3/8/07 13:30 is an invalid datetime and should be sent as 03/08/07 13:30

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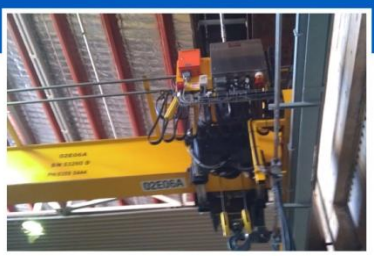

Communication commands:

Command	R/W	Description	Example
a	Read	AccessPack mode	Send:a<CR> Rcv:2
A	Write	Write AccessPack mode	Send:A2<CR>
b	Read	Read button timeout	Send:b<CR> Rcv:40
B	Write	Write button timeout	Send:A40<CR>
d	Read	Get debug level	Send:d<CR> Rcv:0
D	Write	Write debug level	Send:A0<CR>
e	Read	Read E-Stop mode	Send:e<CR> Rcv:0
E	Write	Write E-Stop mode	Send:E0<CR> Normal E-Stop Send:E1<CR> Inverted E-Stop mode
i	Read	Read equipment id	Send:i<CR> Rcv:hoist1
I	Write	Write equipment id	Send:Ihoist1<CR>
l	Read	Read logger Bluetooth id	Send:l Rcv:00:07:80:86:19:47
L	Write	Set logger Bluetooth id	Send:L00:07:80:86:19:47<CR>
m	Read	Read motion threshold	Send:m<CR> Rcv:20
M	Write	Write motion threshold	Send:M20<CR>
n	Read	Read pendant mode	Send:n<CR> Rcv:
N	Write	Write pendant mode	Send:N1<CR> Set to pendant mode Send:N0<CR> Set normal mode
o	Read	Read motion settle time	Send:o<CR> Rcv:10
O	Write	Write motion settle time	Send:O10<CR>
p	Read	Read putdown time out	Send:p<CR> Rcv:125
P	Write	Write putdown timeout	Send:P0<CR> put down timeout disabled. Send:P255<CR> Put down timeout 25.5seconds
q	Read	Read equipment class	Send:q Rcv:crane
Q	Write	Write equipment class	Send:Qcrane<CR>
r	Read	Read RFID scan timeout	Send:r<CR> Rcv:85
R	Write	Write RFID scan timeout	Send:R85<CR>
s	Read	Read site id	Send:s<CR> Rcv:workshop
S	Write	Write site id	Send:Sworkshop<CR>
t	Read	Read motion timeout	Send:t<CR> Rcv:20
T	Write	Write motion timeout	Send:T20<CR>
u	Read	Read local log	Send:u0<CR> Rcv:last_user_name Send:u5<CR> Rcv:sixth_user_on_log

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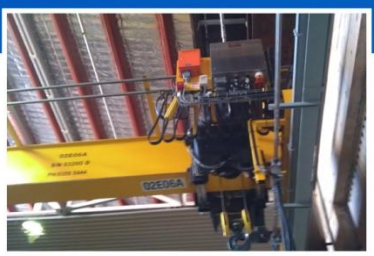

Command	R/W	Description	Example
v	Read	Read firmware version number	Send:v<CR> Rcv:1.3
x	Read	Read Door mode	Send:x<CR> Rcv:0
X	Write	Write Door mode	Send:X0<CR> Door mode disabled Send:X1<CR> Door mode enabled
z	Read	Read local log size	Send:z<CR> Rcv:6
Z	Write	Write local log size	Send:Z6 Sets local log size to 6 (maximum)
?	Read	Read all parameters	Send:?<CR>
*		Reset	Send:*<CR>
!		QA mode	Send:!<CR>
.	Read	Read state of AccessPack	Send:.<CR> Rcv:E_STOPPED

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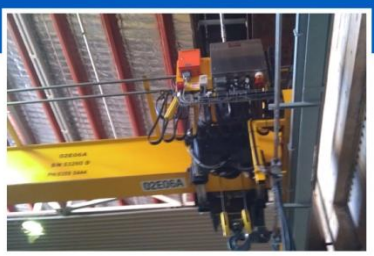

APPENDIX B: FSU SYSTEM REQUIREMENTS

The minimum requirements for operating CASWA's Field Service Utility (FSU) and Link-2 Bluetooth modem are:

- Laptop computer running Windows XP SP3 or later;
- One Spare USB port;
- Microsoft .NET framework 3.5.

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APPENDIX C: FACTORY DEFAULT SETTINGS

Parameter	Factory Default	Radio without motion sensing	Radio with motion sensing	Pendant without motion sensing	Pendant with motion sensing	Vehicle	Fixed equipment (All Models)	Door (including LockBox)
Motion Timeout	20	20	20	20	20	20	20	0
Motion Threshold	10	0	10	0	10	0	10	0
Put Down Timeout	10	0	10	0	100	0	10	40
Motion Settle Time	10	10	10	10	10	10	10	10
RFID Scan Timeout	60	250	60	250	60	60	60	0
Button Timeout	40	40	40	0	0	0	40	0
Estop Invert	0	0	0	1	1	1	1	1
Pendant Mode	0	0	0	1	1	0	0	0
Door Mode	0	0	0	0	0	0	0	1
Log Unauthorised Swipes	0	0	0	0	0	0	0	0
Edge Triggered EStop	No	No	No	No	No	No	Yes	No
Mifare Start/End block	Reset to 0/160	No change	No change	No change	No change	No change	No change	No change

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